

# Emotion-Focussed Psychoeducational Group Therapy for Binge Eating Disorder in Women and Men

A thesis submitted in fulfilment  
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Doctorate of Philosophy in Psychology

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Dear Courtney

The Human Ethics Committee advises that your research proposal "**Binge eating disorder in men and women: Evaluation of a psycho-educational programme**" has been considered and approved.

Yours sincerely



Rebekah Carson  
*Secretary*

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## **List of Abbreviations**

1. AN; Anorexia Nervosa
2. ANOVA; Analysis of Variance
3. ANCOVA; Analysis of Co-Variance
4. APA; American Psychological Association
5. BED; Binge Eating Disorder
6. BES; Binge Eating Scale
7. BMI; Body Mass Index
8. BN; Bulimia Nervosa
9. CBT; Cognitive Behaviour Therapy
  - a. CBT PSH; Cognitive Behaviour Therapy Pure Self Help
  - b. CBT GSH; Cognitive Behaviour Therapy Guided Self Help
10. DASS; Depression Anxiety Stress Scale
11. DBT; Dialectical Behaviour Therapy
12. DSM-IV-TR; Diagnostic and Statistical Manual of Mental Disorders Fourth Edition Text Revision
13. EDE; Eating Disorders Examination
14. EDE-Q; Eating Disorders Examination Questionnaire
15. EES; Emotional Eating Scale
16. IPT; Interpersonal Therapy
17. MANOVA; Multivariate Analysis of Variance
18. NES; Night Eating Syndrome
19. OBE; Objective Bulimic Episode
20. OBET; Obese Binge Eating Treatment
21. PEQ; Programme Evaluation Questionnaire
22. PET; Psychoeducational Therapy
23. PSH; Partial Self-Help Group
24. PSS; Perceived Stress Scale
25. QEWP; Questionnaire on Eating and Weight Patterns
26. SBE; Subjective Bulimic Episode
27. SH; Structured Self-Help Group

- 28. TAS; Toronto Alexithymia Scale
- 29. TG; Treatment Group
- 30. TL; Therapist-Led Group
- 31. WL; Wait-List Control Group

## **Abstract**

A plethora of research has linked negative affect with binge eating in people with binge eating disorder (BED). Cognitive behavioural therapy (CBT) and interpersonal therapy (IPT) have not traditionally addressed emotional regulation deficits. Failure to address emotional aspects of binge eating may explain why some individuals do not respond to CBT or IPT, and why many of those who do respond relapse shortly after finishing treatment. Dialectical behaviour therapy (DBT) specifically targets the inability to accurately recognise and regulate affect. Preliminary investigations have shown that DBT may be efficacious in treating BED. However, it can take up to 10 months, and a shorter intervention targeting affect regulation and recognition may produce similar effects.

Four studies evaluating a ten session emotion-focussed group psychoeducational intervention for BED were conducted. In the first, 25 women diagnosed with subthreshold or full syndrome BED (using DSM-IV-TR criteria) were treated. The second study tested whether the specific components of the intervention, or the treatment as a whole, was required to produce positive outcomes in women. Study three, examined the efficacy of the treatment programme with three men diagnosed with subthreshold or full syndrome BED (also using DSM-IV-TR criteria). The fourth study compared the women's and men's response to treatment.

Following the intervention with women, binge abstinence rates, comparable to those of CBT and IPT, and various other positive changes to eating and general pathology, were observed. These effects were well-maintained up to one-year later. Overall, it was concluded that the whole treatment programme was necessary to produce the optimum outcome for BED in women. A positive outcome was measured in the men, although the effects were not as dramatic as those found in the women. Suggestions for improvements, and suggestions for further research, are discussed. The results provide support for the Affect Regulation Model of BED in women and men.

## **CHAPTER ONE:**

### **General Introduction**

Within this thesis, several investigations are reported on binge eating disorder (BED), an eating disorder that affects a heterogeneous population of both women and men of differing ages (e.g., Arnow, 1999). Chapter One will begin by considering the clinical significance of BED, particularly with respect to eating and general comorbid pathology, and the effect of BED on quality of life and health will also be reviewed. The diagnostic criteria of BED will be outlined and subthreshold and threshold BED will be compared. The validity of the current diagnostic practices will be examined, and particular consideration will be given to the size and frequency diagnostic criteria. An argument for expanding the criteria will be explored. The chapter will include an overview of BED, where epidemiology, age of onset, and the natural course of the eating disorder will be discussed. Chapter One also includes comparisons between BED and other eating syndromes. Chapter Two will discuss three prominent theoretical perspectives, and Chapter Three will review three major treatment types used for BED today. Chapters Four, Five, Six and Seven will present four studies on a psychoeducational programme for treating BED that teaches affect discrimination and management skills. Lastly, Chapter Eight will summarise the findings of the four investigations.

### **The Clinical Significance of Binge Eating Disorder (BED)**

The clinical significance of BED, and the debate as to whether BED should be recognised as a separate and distinct eating disorder rather than a syndrome, is hotly contended. Strong support for the claim that it is a clinically significant eating disorder is provided by diagnostic criteria that distinguish BED from other eating disorders, consistent prevalence rates, the pervasiveness of associated obesity, the psychopathology BED shares with other eating disorders, and connected comorbid psychopathology. Further, studies on the empirical classification of eating disorders have consistently found

evidence for three distinct categories: Anorexia Nervosa (AN), Bulimia Nervosa (BN), and BED (e.g., Bulik, Sullivan, & Kendler, 2000; Mizes & Sloan, 1998; Sloan, Mizes, & Epstein, 2005).

### *Eating Pathology*

BED shares symptoms that are specific to eating disorders; specifically eating pathology and preoccupation with, and overvaluation of shape and weight concerns (e.g., Crow, Agras, Halmi et al., 2002; Masheb & Grilo, 2000). Pathological eating behaviour includes recurrent binges, lack of control during binge episodes, and significant distress over bingeing, such as feeling disgusted, depressed, or feeling guilty about overeating (American Psychological Association; APA, 2000). Those with BED may also eat more rapidly than normal, eat until uncomfortably full, eat large amounts when not hungry, and/or eat alone because of embarrassment (APA, 2000).

Unlike those with AN or BN, those with BED do not over idealise a thin body size (Marcus, 1993), although they do tend to overvalue their shape and weight to the same degree as those with other eating pathologies (e.g., Stunkard & Allison, 2003).

### *Psychiatric Comorbidity*

Empirical research has documented that BED is frequently associated with psychiatric comorbidity. Findings include a higher prevalence of current and lifetime Axis I and II disorders in those with BED compared to overweight non-eating disordered controls (e.g., Stunkard & Allison, 2003; Wilfley, Welch, Stein et al., 2002). Axis I disorders commonly associated with BED include depression, substance abuse or dependence, and anxiety (e.g., Specker, deZwann, Raymond, & Mitchell, 1994; Wilfley, Friedman, Douchis et al., 2000). The severity of these disorders is similar to that of other clinical populations (Wilfley et al., 2000). Axis II disorders that have been found to be related to BED are mainly Cluster B disorders (e.g., borderline and narcissistic personality disorders), although Cluster C disorders (e.g., avoidant personality disorder) may also be linked to the eating disorder (Specker et al., 1994; Wilfley et al., 2000).

### *Health and Quality of Life*

BED can have a significant and detrimental effect on physical health. There is a robust association between BED and obesity (e.g., Masheb & Grilo, 2000; Striegel-Moore, Cachelin, Dohm et al., 2001), and obesity is often associated with other serious health problems such as heart disease, hypertension, and diabetes. It is considered the number one health problem in New Zealand (e.g., Diabetes Association, 2003; Murphy, 2003; Swinburn, Ashton, Gillespie et al., 1997).

Physical illnesses related to obesity are considerably costly to treat (Swinburn et al., 1997). Using information taken from the literature and from various medical sources (such as hospital services and general practitioner consultations), Swinburn and associates (1997) found that \$135 million was spent on obesity and related health problems per year in New Zealand.

Available evidence suggests that, if left untreated, obesity increases in those with BED over time (e.g., Raymond, deZwann, Mitchell et al., 2002; Wilfley et al., 2002), and that successful treatment of obesity may require treatment of BED (Agras, Telch, Arnow et al., 1997).

Psychological distress associated with binge eating in BED also causes significant disruption to life enjoyment (Devlin, Goldfein, Dobrow, 2003; Striegel-Moore et al., 2000; Striegel-Moore, Wilson, Wilfley et al., 1998), and distress may be more due to binge eating than being overweight (Didie & Fitzgibbon, 2005).

### **Diagnostic Criteria**

Stunkard first documented BED in 1959, yet it remains in the DSM-IV-TR under the category “eating disorder not otherwise specified” (APA; 2000). According to the DSM-IV-TR, to meet the criteria for threshold BED, recurrent episodes of binge eating must occur at least two times per week on average, and for six months. The episodes must be characterised by eating, in a discrete period of time, an amount of food that is without doubt larger than most people would eat in a similar period of time under similar

circumstances. The episode must also be accompanied by a sense of loss of control over eating during the episode, which may involve a feeling that one cannot stop eating once they have begun, or they may not be able to control what or how much they are eating (APA, 2000). The binge eating episodes must also be associated with three or more of the following: eating much more rapidly than usual, eating until uncomfortably full, eating large amounts of food when not feeling physically hungry, eating alone due to embarrassment about how much one is eating, and/or feeling disgusted with oneself, depressed, or very guilty after overeating (APA, 2000). The individual must feel markedly distressed by their binge eating behaviour, and binge eating is not associated with regular use of inappropriate compensatory behaviours such as purging, fasting, excessive exercise or laxative use, which are characteristic of bulimia nervosa purging-type (BN purging type, APA, 2000).

Although obesity is frequently associated with BED (e. g., Masheb & Grilo, 2000; Striegel-Moore et al., 2001), not all individuals with BED are obese (e.g., Didie & Fitzgibbon, 2005). Further, the degree of associated pathology does not differ between those with BED who are obese and those with BED who are normal or overweight (Didie & Fitzgibbon, 2005). Thus, whereas suggestions have been made to include obesity as an additional diagnostic criterion for BED, research does not support the practice of adding a body mass index (BMI,  $\text{kg/m}^2$ ) cut-off criterion (Didie & Fitzgibbon, 2005).

### **Subthreshold and Threshold BED**

It has been often argued in the literature that the severity criteria for diagnosing BED are too restrictive (Hay & Fairburn, 1998; Striegel-Moore et al., 1998). An individual's life can be significantly impaired by recurrent binge episodes, and yet they will not meet all the criteria for a diagnosis of BED (Striegel-Moore et al., 2000). Reflecting this, recent literature has differentiated between two types of BED: threshold or clinical BED, and a less restrictive category, subthreshold or subclinical BED. Individuals who meet all the DSM-IV-TR criteria for BED are diagnosed with threshold BED (Striegel-Moore et al., 1998; 2000). Those individuals who meet all the criteria for



BED on the DSM-IV-TR, but who binge less than two times per week, are diagnosed with subthreshold BED (Striegel-Moore et al., 1998). Consideration has also been given to the size of binge criteria, where those whose binge episodes are not objectively large, as the criteria stipulate, are diagnosed with subthreshold BED (e.g., Striegel-Moore et al., 1998).

### *Binge Frequency*

It has been documented that BED is variable, and individuals with BED do not consistently binge at the rate of twice per week over an extended period of time (Hsu, Mulliken, McDonagh et al., 2002). In 1998, Striegel-Moore and associates compared clinical (threshold) and subthreshold BED, where subthreshold BED was diagnosed in those who met the DSM-IV criteria for BED, except binge frequency (which was less than two times per week). The study found men and women diagnosed with clinical and subthreshold BED did not differ on measures of dieting and weight history, or body image disturbance. However, threshold BED reported attaching greater levels of importance to weight, and significantly greater levels of sadness and lower self-esteem than subthreshold BED. Using the same diagnostic criteria for subthreshold BED, Striegel-Moore and associates (2000) also compared threshold and subthreshold BED on several measures of pathology. Those with subthreshold BED did not differ significantly to those with threshold BED with respect to measures of restraint, weight and shape concern, and psychiatric distress. Crow and associates also investigated the differences between full and partial eating syndromes (Crow, Agras, Halmi et al., 2002). Eating disorder diagnoses were given using an earlier version of the Eating Disorders Examination (EDE; Cooper & Fairburn, 1987), the Binge Eating Scale (BES; Gormally, Black, Daston et al., 1982), and the Three-Factor Eating Questionnaire (TFEQ; Stunkard & Messick, 1985). Partial BED was diagnosed in those fitting all criteria for full syndrome BED but who binged less than two times per week. They found that those diagnosed with full syndrome BED scored higher on the Shape Concern subscale of the EDE than did those diagnosed with partial BED, but no other differences were found. It is clear that although they might not meet the criteria for full syndrome BED, those who

binge less than twice per week, but meet all remaining diagnostic criteria for BED, experience considerable psychological distress. This calls into question the validity of relying on binge frequency as a diagnostic criterion for BED.

### *Size of Binge*

The importance of the amount of food consumed during a binge has also been debated. The EDE distinguishes between two types of binge episodes; objective and subjective bulimic episodes (Fairburn & Cooper, 1993). An objective bulimic episode (OBE) must include consumption of an objectively large amount of food and a loss of control (Fairburn & Cooper, 1993). A subjective bulimic episode (SBE) includes a loss of control, but while it is considered excessive by the individual, the amount of food consumed is not rated as “large” by the interviewer (Fairburn & Cooper, 1993). Currently, those whose binge episodes are rated as OBEs, who experience a loss of control during bingeing, and who binge at least two times per week meet the DSM-IV-TR diagnostic criteria for BED. However, those whose binge episodes are rated as SBEs, and who fit all other criteria, do not meet the DSM-IV-TR diagnostic criteria for BED. It is common for researchers to include both subjective and objective bulimic episodes in their diagnoses of threshold BED (e.g., Agras, Telch, Arnow et al., 1997), or to not distinguish between them at all (e.g., Eldredge, Agras, Arnow et al., 1997; Kerzhnerman & Lowe, 2002; Pendleton, Goodrick, Poston et al., 2002; Stickney, Miltenberger, & Wolff, 1999; Wolff & Clark, 2001).

Determining whether the food consumed is objectively large given the circumstances is difficult (Brody, Walsh, & Devlin, 1994), and it is often necessary to make an arbitrary distinction between an OBE and SBE. Further, researchers have since found that individuals suffering from BED do not always consume an objectively large amount of food during a binge, despite associated distress and a sense of loss of control (e.g., Johnson, Boutelle, Torgrud et al., 2000; Kerzhnerman & Lowe, 2002; Pratt, Niego, & Agras, 1998; Telch, Pratt, & Niego, 1998; Wilson & Vitousek, 1999). The type of food consumed, mood prior to recalling the eating episode (e.g., Stickney et al., 1999; Telch et al., 1998) or at the time one is asked to recall eating episodes (Telch & Agras, 1996), may

predict how food consumed is labelled (Devlin et al., 2003). Further, when the amount of food consumed is used to rate eating episodes as binges or nonbinges there is little agreement between binge eaters, peers, and dieticians (Johnson, Carr-Nangle, Nangle, Antony, & Zayfort, 1997). Telch and associates (1998) investigated how 60 women, assessed as having BED according an interview based on the Questionnaire on Eating and Weight Patterns (QEWP; Spitzer, Yanovski, Wadden et al., 1993), defined binge episodes. In order to avoid biases introduced from the interview in binge definition, the researchers told the participants that they were interested in their personal definition of a binge episode, and that there was no right or wrong answers. Two independent raters, trained in recognising loss of control and large consumption of food in accordance with the EDE (Fairburn & Cooper, 1993), coded the participant responses. The only DSM-IV (APA, 1994) criterion that was consistently listed as present in the women's definition of a binge was loss of control. Less than half the participants indicated that a large amount of food was central to defining a binge.

#### *Eating Pathology and Psychiatric Comorbidity*

Few differences in eating pathology have been found between threshold and subthreshold BED on measures of eating pathology (e.g., Crow et al., 2002; Martin, Williamson, & Thaw, 2000; Stice, Killen, Hayward et al., 1998; Striegel-Moore et al., 1998; 2000): including measures of dieting and weight history, body image disturbance, shape concerns and dietary restraint. Further, levels of severity in associated pathology, particularly depression, do not appear to differ in subthreshold and threshold BED (e.g., Crow et al., 2002; Martin et al., 2002).

#### *Summary*

Studies indicate that the quantity of binges per week and amount of food consumed during a binge may not be relevant criteria for diagnosing BED. Further, the preponderance of research comparing subthreshold and threshold BED on eating and comorbid disorders has found little difference between the eating pathologies. Loss of

control has been consistently demonstrated to be the factor that binge eaters use to define a binge episode (e.g., Johnson et al., 2000; Johnson, Robertson-Nay, Rohan et al., 2003; Telch et al., 1998). This suggests that loss of control may be a more relevant criterion than size or frequency of episodes in diagnosing binge eating.

## **An Overview of BED**

### *Epidemiology*

Binge eating disorder occurs in approximately 2% of the general population (e.g., Stickney et al., 1999), and approximately 30% of those seeking weight-loss treatment have been diagnosed with BED (Spitzer et al., 1993). In a community-based survey in Australia involving 1,785 women and 2,725 men, Hay (1998) found that the prevalence was estimated to be 2.5% using the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993) or 1% using criteria from the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994). In an Austrian sample of 1,000 women, 3.3% met the diagnostic criteria for BED (Kinzl, Traweger, Trefalt et al., 1999). The slight difference in prevalence rates in these studies may be due to a population difference between Australia and Austria, or may be due to a failure of one to distinguish between objective and subjective bulimic episodes.

### *Age of Onset*

The age of onset of threshold BED is typically late adolescence to early twenties (APA; 2000). In a study of a community sample Spurrell, Wilfley, Tanofsky et al., (1997), assessed 19 men and 68 women as having threshold BED, using the EDE (Fairburn & Cooper, 1993). The sample was divided into those who binged prior to dieting and those who dieted prior to bingeing. For the former (45% of the sample), the mean age of onset was 12 years, for the latter (55% of the sample) the mean age was 25 years. Despite retrospective reporting, the results of this study are similar to those of

other studies (e.g., Mussell, Mitchell, Weller et al., 1995; Spitzer et al., 1993; Wilson, Nonas, & Rosenblum, 1993). Thus, those who binge first appear to have an earlier age of onset of BED, occurring in late adolescence. Those who diet first appear to have a later onset of BED, occurring in early to mid-twenties.

### *The Natural Course of BED*

From the studies to date, it would seem that BED is a highly variable eating disorder that spontaneously remits in some, and worsens over time in others. In a study by Cachelin and associates (1999), of the 21 participants who completed the study, ten women appeared to be in a partial remission as their binge eating frequency had dropped to less than once per week over the follow-up period (Cachelin, Striegel-Moore, Elder et al., 1999). Nevertheless, 11 still met the full criteria for BED. Another similar study with young women (Fairburn, Cooper, Doll et al., 2000), documented that of the 48 original participants diagnosed with BED using the EDE (Fairburn & Cooper, 1993), 33 made a full recovery after five years. The participants received no treatment during the five years of follow-up, and most of the improvements were made at 15 months. Nevertheless, seven of the 40 who completed the study still had threshold BED, indicating that not all individuals with BED spontaneously recover over time. Conclusions drawn from this study can only be applied to young women with BED, and may not apply to clinical samples that tend to be older relative to the sample of this study (Fairburn et al., 2000).

### **BED and Other Eating Syndromes Compared**

Although BED and other eating syndromes share some characteristics, BED can be distinguished from BN and night eating syndrome (NES).

#### *Bulimia Nervosa (BN) and BED Compared*

The extent that BN and BED differ lends strong support to employing different

diagnostic and treatment strategies for the two eating disorders. Bulimia and BED share many similar characteristics including: binge eating (APA, 2000; Becker, Grinspoon, & Klibanski, 1999); weight and shape concern (Striegel-Moore et al., 2001); and dietary restraint (e.g., Crow et al., 2002), although the severity of dietary restraint is worse in BN (e.g., Devlin et al., 2003; Wilfley, Wilson, & Agras, 2003; Wilson & Fairburn, 2002). Further, the eating syndromes can be distinguished by differences in a number of other characteristics. For example, those with BN are young females who often use compensatory behaviours for their bingeing (APA; 1994; 2000), who are generally of normal weight (Geliebter, 2002; Wilson & Fairburn, 2002), and who often have a history of AN and BED (Striegel-Moore et al., 2001). Those with BED are males and females of varying ages who do not use compensatory behaviours (e.g., APA, 2000), who are often obese (e.g., Masheb & Grilo, 2000) and who often do not have a lifetime history of other eating disorders (Striegel-Moore et al., 2000). Differences between daily eating habits and in the type of food consumed during a binge episode also indicate that BED and BN are distinct eating disorders (e.g., Crow et al., 2002; Masheb & Grilo, 2000; Wilfley et al., 2003).

#### *Night Eating Syndrome and BED Compared*

NES was first documented by Stunkard and associates in 1955 (Stunkard, Grace, & Wolff, 1955), and yet little is known about it. Whether NES is a type of disordered eating, or a maladaptive eating habit, is uncertain (Stunkard, Berkowitz, Wadden et al., 1996). At this stage, NES is classified as a “syndrome” and lacks specific diagnostic criteria in the DSM-IV-TR (APA, 2000; Grilo & Masheb, 2004; Stunkard & Allison, 2003). It is characterised by morning anorexia (lack of appetite in the morning) and evening hyperphagia (overeating in the evening; Stunkard et al., 1955), and with insomnia, illustrated by trouble falling and staying asleep (Stunkard et al., 1996). Depression, although not a defining characteristic of NES, appears to be less present in the mornings, but increases during the evening and night (Stunkard et al., 1955). Like BED, NES is found predominantly in obese individuals (Adami, Meneghelli, & Scopinaro, 1999; Geliebter, 2002). In later research, Stunkard and associates (1996)

revised the criteria to include the stipulation that those with NES consumed greater than 50% of their daily calories after 7pm.

Despite overlapping symptoms, such as depression and obesity, the prevailing belief is that BED and NES are different disorders (e.g., Adami et al., 1999; Allison, Grilo, Geliebter, 2002; Masheb et al., 2005; Stunkard et al., 1996). Worry over food and diet, and body dissatisfaction occur in BED but not in NES (Adami et al., 1999). Morning anorexia and sleep difficulties occur in NES and not BED (Stunkard et al., 1996; 1995; Stunkard & Allison, 2003). In particular, for those with NES food consumed during night time awakenings resembles food eaten during a snack, while the amount of food consumed during a binge episode in BED is generally larger by comparison (Allison et al., 2005; deZwann, Burgard, Schenck et al., 2003; Stunkard & Allison, 2003).

Binge eating disorder and NES share several characteristics, and due to overlapping symptomatology, Stunkard and associates (1996) argue that some individuals require a dual diagnosis. Some investigations have found that a substantial number of those diagnosed with BED also meet the criteria for NES (Grilo & Masheb, 2004; Powers, Perez, Boyd et al., 1999). A higher BMI for those with BED and NES compared to those with NES only, or BED only, has also been found (Grilo & Masheb, 2004; Napolitano, Head, Babyak et al., 2001). This has important treatment implications. For instance, although treatment for BED may be successful, weight-loss treatment may be impeded if night eating continues undetected or untreated. Further research regarding the diagnostic criteria for NES is needed, particularly investigations employing non-clinical populations, non-obese populations, and treatment studies for NES and NES/BED combined.

## **CHAPTER TWO:**

### **Theoretical Perspectives of BED**

Many theories have been suggested to explain the etiology and maintenance of BED. Three principal theories are reviewed in the following chapter: Restraint Theory, the Escape Model, and the Affect Regulation Theory.

#### **Restraint Theory**

The original Restraint Theory of binge eating by Ruderman (1986) was intended to explain differences in eating patterns between normal weight and obese individuals. It was later found that the theory was better suited to explaining binge eating behaviour in those with eating disorders (Ruderman, 1986). Restraint in eating disorders is thought to lie along a continuum. At one end of the restraint continuum is constant worry about what is eaten, dieting, and difficulty in maintaining resistance to eating (Ruderman, 1986). At the other end is unrestrained eating, where individuals eat when they desire, and eat freely (Ruderman, 1986). According to Restraint Theory, restrained eating is characterised by irregular eating patterns of dieting interspersed with recurrent temporary disinhibition of restraint (Ruderman, 1986). Disinhibition of eating restraint is said to occur when self-control is disrupted by several factors including alcohol, cognition and emotion (Ruderman, 1986). Preliminary studies by Polivy and Herman (1976; 1976b) appeared to indicate that alcohol disinhibited eating in restrained eaters. However, disinhibition occurred only when participants knew they were drinking alcoholic beverages (Polivy & Herman, 1976; 1976b), but did not occur when participants unknowingly drank alcohol (Polivy & Herman, 1976; 1976b). Due to ethical limitations, very few studies have since been performed on the disinhibition of restrained eating through known or unknown consumption of alcohol. Beyond speculation, little is actually known about the influence of alcohol on restrained eating.

In the case of cognition, dichotomous thinking regarding diets and lapses can lead restrained eaters to temporarily abandon their diets altogether when a lapse in restraint



occurs (Ruderman, 1986). Westernhoefer (1991) proposed that dietary restraint could be categorised as Flexible Control (FC) or Rigid Control (RC). Whereas RC is characterised by rigid rules and “all or nothing” thinking regarding eating and food, FC is the ability self-regulate food intake using flexible approximations to a desirable caloric intake over the course of the day (Westernhoefer, 1991; Westernhoefer, Broeckmann, Münch et al., 1994). Higher levels of emotional and eating pathology, including disinhibition of restraint and binge eating, have been associated with RC (e.g., Timko & Perone, 2005; Westernhoefer, Stunkard, & Pudel, 1999). As it has been associated with lower binge scores, FC may be a protective factor against binge eating (Westernhoefer et al., 1999).

A study by Masheb and Grilo (2002) investigated the relationship between flexible and rigid restraint and binge eating in BED. Participants were 148 outpatients for a clinical trial who met the DSM-IV (APA, 1994) criteria for BED, and diagnoses were confirmed using the Eating Disorders Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994). The results did not support the Restraint Model; neither rigid nor flexible restraint were associated with binge episodes in BED (Masheb & Grilo, 2002).

According to the Restraint Model, negative affect leads restrained eaters to consume more food, whereas unrestrained eaters consume less (Ruderman, 1986). This may be because negative affect decreases motivation to continue with the diet (Herman & Polivy, 1984), or because emotional distress leads restrained eaters to seek comfort or distraction from their dietary plans (Heatherton & Baumeister, 1991; Ruderman, 1986). Several studies have demonstrated restrained eating can be disinhibited through negative affect (e.g., Lowe, Whitlow, & Bellwoar, 1991; Stice, Akutagawa, Gaggan et al., 2000), and several have found no link between overeating and negative affect in restrained eaters (e.g., Dritschel, Cooper, & Charnock, 1993; Van Strien, Cleven, & Schippers, 2000). Spurrell and associates (1997) found support for the Restraint Theory of binge eating in participants whose dieting behaviour preceded binge eating. However, for those where binge eating preceded dieting, the results did not support the Restraint Theory. These results may go some way towards explaining the contradictory results of previous research and indicate that the influence of restraint on binge eating may be dependent on the order in which binge eating and dieting originally occurred (Spurrell et al., 1997).

Lowe (1993) proposed a Three-Factor Model of restraint in eating disorders. The first factor is a stable and enduring history of dietary restriction and episodic overeating, the second is a current and ongoing attempt to restrict food intake, and the third is successful weight loss that has been maintained for at least the previous year. The first factor is considered to produce a particular vulnerability to overeating episodes as it not only reduces ability to detect satiety and hunger, but also lowers personal confidence in one's ability to successfully maintain a diet (Lowe, 1993). Lowe also distinguishes between restrained eating and dieting; restrained eaters try not to eat too much whereas dieters constantly struggle to eat less than they need (1993). Research has shown that an early onset of dieting is associated with binge eating in BED (e.g., deZwinn, Mitchell, Seim et al., 1994; Reiner, Schindler, & Ludwik, 2005), suggesting that the first factor of the Three Factor Model is indeed a risk for BED. However, in a study using correlations between measures, Hagan and associates (2002) found little association between dieting and chaotic eating, indicating that it is not food restriction behaviour per se that is the cause of binge eating in BED (Hagan, Shuman, Oswald et al., 2002). The authors cite negative affect as a more likely contributor to bingeing.

Other research has also found evidence against restraint theories of BED, such as lower levels of restraint found in BED as compared to other eating disorders (e.g., Crow et al., 2002; Masheb & Grilo, 2000), lack of association between hunger and binge episodes (Lingswiler, Crowther, & Stephens, 1989; Waters, Hill, & Waller, 2001), and the lack of association between restraint and increased bingeing (Cooper, Clark, & Fairburn, 1993; Masheb & Grilo, 2002). Further, research has shown that dieting does not often occur before the onset of BED (e.g., Santonastaso, Ferrara, & Favaro, 1999; Marcus, 1996; Wilfley et al., 2003). The inconsistency of the research on restraint in BED indicates that restraint theories do not adequately account for the etiology of binge eating in BED.

## **Escape Model**

The Escape Model of binge eating focuses primarily on self-awareness, which is often related to shape and weight, negative affect, and binge eating constructs. Heatherton and Baumeister (1991), the founders of the Escape Model, argue that unobtainably high personal expectations and standards, and a particular desire for others to perceive them favourably, generate aversive self-awareness. The intensity of the self-awareness, and failure to achieve self-imposed expectations and ideals, are associated with emotional distress. Restrained eaters will therefore resort to binge eating as an escape from acute self-awareness and negative affect, particularly anxiety and depression. A key component of the Escape Model of binge eating is the disinhibition of previously restrained eating patterns through cognitive narrowing, and avoidance of meaningful thought about matters of identity and consequences of specific events (Heatherton & Baumeister, 1991). During binge eating, attention becomes focused on simple sensations, such as the taste of food, temporarily removing the tendency to focus attention on the consumption of calories and dietary plans (Heatherton & Baumeister, 1991). The Escape Model argues that binge eaters tend to use avoidance coping strategies, such as binge eating, to escape from negative affect (Heatherton & Baumeister, 1991).

Investigations testing how well the Escape Model explains BED are scarce (Castonguay, Eldredge & Agras, 1995). A study by Paxton and Diggins (1997) tested the Escape Model in restrained and unrestrained eaters. The researchers found that the binge eating group had higher levels of negative affect, aversive self-awareness, and elevated levels of avoidance coping. However, avoidance coping was related more to depression than to binge eating scores, suggesting that the Escape Model was not relevant to binge eaters who were not restrained in their eating. Thus, whereas the Escape Model may explain binge eating in eating disorders where restraint is high (Agras, 1995; Crow et al., 2002; Marcus, 1996; Masheb & Grilo, 2002), it cannot adequately explain binge eating in BED where restraint is not as extreme (Paxton & Diggins, 1997).

## **The Affect Regulation Model**

Although the Restraint Theory and Escape Model for eating disorders include the role of negative affect in binge eating, neither can adequately explain the etiology of BED. According to the two theories, restraint mediates the link between negative affect and binge eating, thus, negative affect is considered to play a secondary role. The Affect Regulation Model posits that emotion, particularly emotional distress, plays a central role in binge eating in BED, and argues that those with BED are unable to recognise and regulate their emotions (Goleman, 1995; Telch, 1997; Wiser & Telch, 1999). According to the model binge eating is a dysfunctional emotion regulation strategy for negative affect, and those with BED may lack alternatives to bingeing (Wiser & Telch, 1999). Binge eating is therefore a maladaptive coping response to negative emotions such as anxiety, depression and anger (Agras, 1995; Johnston et al., 1995; Schmidt, 1998; Stice et al., 2000).

Emotion regulation is a type of self-regulation (LePore, Greenberg, Bruno et al., 2002), and involves effectively pursuing and achieving goals through monitoring of emotional and event feedback (King, 2002). It is a heterogeneous set of processes by which the emotions are regulated (Gross, 1999), and is achieved by a conscious effort at controlling one's emotions by increasing or decreasing the experience or expression of positive or negative affect (Langston, 1994; LePore et al., 2002; Parrott, 1993). Theorists (e.g., Gross, 1999; LePore et al., 2002) suggest that emotion regulation includes changes in experiential (positive and negative feeling states), behavioural (facial, bodily and action responses), and/or physiological factors involving the central and autonomic nervous systems. Accordingly, individuals can consciously influence which emotions they experience, when and how they experience them, and how they express their emotions (Gross, 1999; LePore et al., 2002).

Studies linking negative affect and binge eating are common (e.g., Arnow, Kenardy, & Agras, 1992; Deaver, Miltenberger, Smyth et al., 2003; Eldredge & Agras, 1996; Waters et al., 2001). Evidence suggests that negative affect is more often associated with eating in individuals with BED than for normal controls (e.g., Spitzer et al., 1993), and emotional distress tends to precede, or may in fact trigger, binge eating

episodes (Abraham & Beumont, 1982; Arnow, 1995; Arnow et al., 1992; Lingswiler et al., 1989; Telch & Agras, 1996). Binge eating may help alleviate the distress caused by negative affect (Heatherton & Baumesiter, 1991), and provide comfort as it distracts binge eaters from their emotions (Lacey, 1986; Stice, Agras, Telch et al., 2001), or reduces awareness of negative affect (Lacey, 1986).

Arnow and associates (1992) investigated binge eating in 19 obese females who fitted the DSM-III-R (APA; 1987) criteria for bulimia nervosa, but with the absence of purge behaviour. Negative affect, namely anger, anxiety and depression, was a clear antecedent to binge episodes. Although the investigation did not formally diagnose participants with BED, it was able to show that binge eating was often precipitated by emotional distress, thus supporting the Affect Regulation Model. Participants appeared to binge to cope with negative affect, despite the lack of evidence that bingeing brought relief from the emotional distress. The authors noted that while feelings of warmth or pleasure were reported during a binge episode, these positive experiences were short-lived and were followed by overwhelming guilt.

A subsequent study documented that the emotions typically reported prior to a binge, such as anger, are less easily tolerated than those that follow a binge episode, such as guilt (Kenardy, Arnow & Agras, 1996). A study by Macht (1999) investigated characteristics of eating, emotions, and restraint in women and men. Their results revealed a large association between affect and four eating characteristics (hunger, or the general tendency to consume food, impulsive eating, sensory eating and hedonic eating), but little association between restraint and eating (Macht, 1999). These results indicate that emotionality produces a desire to eat in the non-eating disordered population, and that desire to eat is not related to restraint. Thus, the study provides evidence against the Restraint Model for eating disorders and support for the Affect Regulation Model.

In a recent investigation by Deaver and colleagues (2003), binge eaters recorded the level of negative affect associated with binge eating. Self-reports of binge eating were taken, and then evaluated in accordance with the criteria for a binge outlined in the QEWP (Spitzer et al., 1993). Before the study began, participants were educated about self-monitoring, and were given advice about how to handle uncomfortable questions regarding self-monitoring from friends and family. They were then instructed to fill in an

emotion grid before they ate, and every two minutes thereafter until 30 minutes after they had finished eating. The total monitoring time was four days, unless the participant had not binged, in which case the total monitoring time was extended to seven days. Reminder phone calls were given to encourage the participants to continue with monitoring. The participants recorded experiencing negative affect prior to binge episodes, which lessened during binges, but increased after. A similar pattern of affect was recorded during a normal meal, but negative affect was significantly lower before, during and after a binge episode. Limitations include lack of formal diagnoses, reliance on, and biases associated with self-monitoring, and use of a non-treatment seeking, undergraduate population, and may limit conclusions that can be inferred from this research. Nevertheless, the results of this investigation provide support for the Affect Regulation Model of binge eating (Deaver et al., 2003). As previous research has suggested (e.g., Arnow et al., 1992; Kenardy et al., 1996), negative affect before a binge such as sadness, anxiety, or anger, may differ from that experienced after, such as guilt. Future research should investigate levels of specific affect associated with binge episodes.

### *Alexithymia*

Inflated levels of alexithymia in BED relative to non-BED participants provide additional support for the Affect Regulation Model (Pinaquy, Chabrol, Simon et al., 2003). Alexithymia, originally described by Nemiah, Freyberger, and Sifneos (1976), is a multidimensional construct used to describe individuals who are unable to appraise and verbally express their emotions (deZwann, Bach, Mitchell et al., 1995; Pinaquy et al., 2003) and who have difficulty in distinguishing between feelings and bodily sensations (Lumly, Tojek, & Macklem, 2002; Taylor, Bagby, Ryan et al., 1988). When asked to describe their emotions, alexithymic individuals may be confused (e.g., “I don’t know”), may produce answers that are vague or overly simple (e.g., “I felt bad”), or may describe a physical state (e.g., “my heart raced”) rather than offering an emotion (Lumly et al., 2002). Similarly, through their inability to appraise and verbally express emotions,

alexithymic individuals are unable to process and regulate emotional states (Lumly et al., 2002).

Research has documented that individuals with eating disorders (Bourke, Taylor, Parker et al., 1992; Cochrane, Brewerton, Wilson et al., 1993), and with BED in particular (Pinaquy et al., 2003), are more alexithymic than control subjects. However, research investigating BED and alexithymia is sparse. In a recent investigation alexithymia scores were significantly higher for BED than non-BED participants, and a link between alexithymia and emotional eating was found in those with BED (Pinaquy et al., 2003). It was concluded that those with BED have deficits in identifying and communicating their feelings and also have a tendency to binge in response to emotions.

### **CHAPTER THREE: Treatments for BED**

Although studies on the natural course of BED appear to indicate that it spontaneously remits, and diagnoses appear to fluctuate over time, benefits can still come from treating symptoms, or from preventative treatment (Devlin et al., 2003). Further, not all individuals with BED will recover over time (see Fairburn et al., 2000).

This chapter is a review of the major types of treatment currently employed to treat BED: cognitive-behavioural therapy, interpersonal therapy, and the newly introduced dialectical behaviour therapy. A brief review of psychoeducation therapy and BED is also included.

#### **Cognitive-Behaviour Therapy (CBT)**

The CBT manual, *Cognitive-behavioral therapy for binge eating and bulimia nervosa: A comprehensive treatment manual* (Fairburn, Marcus & Wilson, 1993) is presented in three stages, and treatment takes approximately 20 weeks to complete.

Stage one, which consists of eight sessions, establishes an understanding of the cognitive account of the maintenance of BN, and then focuses on stabilising and normalising eating patterns. Before starting treatment, the patient's full history, including their mental and physical states, is taken. Session one introduces the patient to the treatment structure and content, likely outcome, and need for absolute participation and commitment. Self-monitoring is also initiated in the first session. Session two begins with a review of the self-monitoring, or lack of, for the previous week, and sheets are reviewed at the beginning of each session for the remainder of treatment. Weekly weighing is also initiated, and will also take place for the rest of treatment. Session three re-examines the cognitive view of BN. The patient is given advice about weighing, eating, vomiting, and other purging behaviour. In sessions three to eight, alternative behaviours are suggested, and stimulus control techniques regarding eating are introduced. At the end of stage one,



the interviewer considers interviewing the patient's friends or relatives, and monitors the patient's progress.

Stage two, which also consists of eight sessions, deals with addressing the distorted beliefs and ideals held about shape and weight. Each session of stage two is presented weekly, and covers procedures for stopping dieting tendencies, improving problem solving skills, and restructuring cognitive distortions regarding shape and weight. Concerns about shape and weight are examined logically, using procedures developed for the treatment of depression (e.g., Beck, Rush, Shaw et al., 1979). Other cognitive distortions, such as dichotomous thinking, perfectionism, and low self-esteem, are addressed.

Stage three, which consists of two sessions, concentrates on the maintenance of treatment effects. Three interviews, held at two-week intervals, are given. Reassurance that improvements will be made following treatment completion are given to those who still present eating disorder symptoms. When to cease self-monitoring is left up to the patient, but the urge to stop due to a relapse is pointedly emphasised. The patient is also informed that normalisation of hunger and satiety sensations will occur soon after the end of treatment, if they have not already returned. The likelihood of relapse is discussed, and a treatment maintenance plan is devised.

Due to the seemingly similar manifestations of the eating disorders, CBT for BN was adapted to treat BED. Fairburn and associates' treatment manual points out that the eating habits of BN and obese binge eaters differ, in that purging and extreme dieting are less common in obese binge eaters. In addition, the manual notes that attitudes to shape and weight also differ. It argues that whereas obese binge eaters are significantly concerned about their shape and weight, their ideas regarding these constructs are not overvalued. Modifications to stage one include educating the patient about obesity, modifying eating, addressing nutrition, and initiating regular exercise. Modifications to stage two include restructuring cognitions regarding their commonly held belief that they are compulsive overeaters who are addicted to food, and that some foods should be avoided due to their "toxic" nature. Exposure is given, either in vivo or in imaginal, to situations that have been previously avoided due to the belief that they would trigger a binge. Overeating during normal meals is modified, directed by flexible guidelines and

not rigid dietary plans. Modifications to stage three include introducing balance to all aspects of the person's lifestyle, in particular, establishing a balance between activities that they feel they should do with activities they want to do. A broader base of gratifying activities to replace bingeing is devised to reduce the reinforcing nature of binge eating.

As predicted, studies investigating the efficacy of employing CBT to treat BED have yielded similar results to those that have examined the efficacy of using CBT to treat BN (Agras, 1995). Telch and associates (Telch, Agras, Rossiter et al., 1990) showed an 80% abstinence rate in binge eating after CBT. This change in binge eating did not occur in the control group while they remained in the wait list condition, but when the treatment was applied to the control group, the same abstinence rate was achieved. Unfortunately, at 20 weeks, abstinence from binge eating was not maintained for 54% of the participants who had originally achieved abstinence (Telch et al., 1990). Agras and associates (1997) found at the end of treatment 41% were abstinent from binge eating, but at one year follow-up only 33% of those had continued to abstain. Eldredge and associates (1997) studied the effects of extending CBT for initial treatment nonresponders. They showed that after 12 weeks, 18 of the 36 participants in the treatment condition no longer met the criteria for BED. After an additional 12 weeks of CBT that focused on specific problem areas identified by the participants at the end of the initial 12 weeks, six of the total 14 initial nonresponders no longer met the criteria for BED. The authors did note, however, that after 20 weeks, treatment effects ceased to occur (Eldredge et al., 1997). This indicates that despite all efforts made, treatment did not address specific problem areas for the remaining 8 participants. As the study did not include a follow-up, the long term effects of extending treatment for initial non-responders are unknown. Many subsequent studies of the efficacy of CBT for BED have shown significant treatment effects compared to no treatment (e.g., Wilfley et al., 2002; Wilfley, Agras, Telch, et al., 1993), although abstinence rates have varied from less than 50% to greater than 90% (e. g., Peterson, Mitchell, Engbloom et al., 1998; Wilfley et al., 1993; 2002) and treatment effects were are not well maintained in the long-term (Agras, 1995; Agras et al., 1997).

### *CBT and Weight Loss Therapy*

As CBT alone did not produce weight loss (Stunkard & Allison, 2003), and obesity is problematic among those with BED (e.g., Masheb & Grilo, 2000; Striegel-Moore et al., 2001), it was considered that behavioural weight-loss therapy may enhance treatment effects of CBT. Behavioural weight loss strategies are based on three assumptions: that excess weight is caused by an imbalance between energy expenditure (through exercise) and energy intake (food consumption); that these behaviours are learned; and that long-term success of weight loss involves learning new behaviours that replace the old (Jeffery, Drewnowski, Epstein et al., 2000).

Agras and associates (1997) followed CBT with weight loss treatment, and found that only those who were abstinent at the end of treatment lost weight, whereas those who did not abstain gained an average of 2kg. For the abstinent group, small weight losses occurred during the weight loss treatment phase, and were well maintained at one year follow-up. Nevertheless, those participants who were still binge eating at the end of CBT treatment, but became abstinent after the weight loss treatment, gained an average of 3.3kg at one year follow-up. It was concluded that cessation of binge eating played an important role in weight loss maintenance in obese binge eaters.

Marchesini, Natale, Chierici and associates (2002) treated women and men with BED with CBT for binge eating based on the CBT manual (Fairburn & Cooper, 1993), followed by a CBT weight loss programme based on the *LEARN Program for Weight Control* (Brownell, 1989). A non-BED and a control group were included in the study. The non-BED group was not treated for binge eating, but was treated for obesity using the same CBT manual for weight loss as the BED group. While no weight loss was recorded in the control group, the BED group lost an average of 7.7kg, and the non-BED group lost an average of 11.1kg. However, the study did not have a follow-up investigation, thus the long-term effects of the weight loss are not known, and binge abstinence was not measured.

Behavioural weight loss treatment programmes that do not target binge eating have also produced nearly equivalent rates of binge abstinence as CBT and interpersonal therapy (IPT; Stunkard & Allison, 2003; Wonderlich, deZwann, Mitchell et al., 2003).

Approximately one half of participants diagnosed with BED will reach abstinence from binge eating within one year of following a very low calorie diet (Wonderlich et al., 2003).

Goodrick and associates (1998) compared dieting to non-dieting treatment for overweight women with binge eating problems (Goodrick, Poston, Kimball et al., 1998). The dieting treatment included restricting fat intake, nutritional counselling, self-monitoring, stimulus control methods, social support, problem solving, goal setting, and relapse prevention. The dieting treatment was reinforced using the *LEARN Program for Weight Control* (Brownell, 1989), and an exercise regime of 4 to 5 hours per week was introduced that used intensity based heart rate training. The non-dieting group was treated using psychotherapy focusing on breaking away from dieting cycles through normalisation of eating patterns, self-acceptance and accepting one's body, focusing on health, and becoming desensitised to social pressures for thinness. Treatment focused on social support and repairing damaged relationships.

The dieting group lost an average of 0.57kg at 6-months, the non-dieting group had gained 1.35kg, and the control group had gained 0.64kg. Both the dieting and non-dieting group produced similar reductions in binge eating, whereas the reductions in binge eating in the control group were non-significant. Controlling for attendance and changes in self-reported exercise did not influence changes in weight or binge eating. At 18-months follow-up, both the dieting and non-dieting groups had similar weight gains of 1kg, but the reduction in binge eating was sustained. Although BED was not diagnosed in this study, and binge eating was assessed using a lower cut-off score of  $\geq 21$  rather than the empirically derived  $\geq 27$  on the BES (Gormally et al., 1982), the research does indicate that bingeing can be reduced using treatments that do not specifically treat binge eating. Nevertheless, it also suggests that despite sustained reductions in binge eating, weight regain will persist.

Porzelius and associates also found a significant reduction in weight and binge eating using treatment that did not directly target binge eating (Porzelius, Houston, Smith et al., 1995). Participants were assigned to one of four groups: two that were treated using standard weight loss, and two that were treated using a treatment developed for the study. Standard weight loss treatment was based on the *LEARN Program for Weight Control*

(Brownell, 1989) and was compared to Obese Binge Eating Treatment (OBET), a treatment that combined the *LEARN* programme (Brownell, 1989), group social support, coping skills for negative affect, assertiveness, problems solving skills, social skills, and reduction in restraint through normalisation of eating patterns (Porzelius et al., 1995). Binge eating severity was measured using the BES (Gormally et al., 1982). Classifications for levels of severity were based on those used by Marcus and associates (1988), where a score of <17 was considered to indicate no binge eating, moderate bingeing was indicated by a score of 17-27, and a score of >27 indicates severe binge eating (Marcus, Wing, & Hopkins, 1988). Assessments were made at baseline, post-treatment, and at 12-months follow-up. Binge eating moderated the difference in treatment effects, where those with severe binge eating lost more weight in the OBET programme, and those with moderate binge eating lost more weight using standard weight loss treatment. Weight loss did not differ for types of treatment for those women who did not binge regardless of the treatment used. At 12-months follow-up, weight loss for those with severe binge eating was maintained only in the OBET treatment group. Weight loss was not maintained for those with moderate binge severity for either type of treatment. Several limitations were noted, including an absence of a wait-list control group, binge severity assessment through self-report, and a relatively small sample size (Porzelius et al., 1995).

Long term weight loss continues to be problematic in the treatment of obese individuals with BED (Wonderlich et al., 2003). Despite positive results regarding weight loss for obese binge eaters, effects are temporary and weight regain appears inevitable (Goodrick et al., 1998; Jeffery et al., 2000; Porzelius et al., 1995). Jeffery and associates (2000) reviewed weight loss intervention studies and found that weight regain occurred in even the most effective interventions. The authors argue that one contributing factor to weight regain is that the behaviours that many individuals describe as weight loss attempts, namely increase in exercise and decrease in fat intake, are behaviour changes that last for only a short time. Additionally, even after binge eating has ceased, weight regain continues to occur, although it is not associated with relapse of binge eating (Fairburn et al., 2000). In the natural course study by Fairburn and associates (2000), despite a considerable decrease in binge eating, 39% had continued to gain weight and

met the criteria for obesity at the 5-year follow-up. The outcome of long-term weight loss after binge abstinence is still unknown, and the study of obesity and BED would benefit from longer term follow-up studies (Wonderlich et al., 2003). Furthermore, increased treatment length appears to be linked with increased success in maintenance of weight loss (Jeffery et al., 2000). However, although it could be argued that the best approach would be to extend the therapy indefinitely, continued compliance and attendance to therapy have been poor in studies where therapy was extended (e.g., Jeffery, Wing, Thorson et al., 1993).

### *Guided and Unguided CBT*

Self-help CBT treatment has enjoyed some success in reducing BED in some individuals (Wilson, Vitousek, & Loeb, 2000; Wonderlich et al., 2003). In a well controlled study, Carter and Fairburn (1998) investigated the efficacy of pure self-help (PSH) and guided self-help (GSH) administered by non-specialists, and compared them to a wait-list control group. Assessments were made at baseline, post-treatment, and at 3- and 6-months follow-up. Those in the wait-list control condition were randomly assigned to either PSH or GSH after 12 weeks. Participants who had been given treatment for binge eating previously were excluded from the research. Those in the PSH group were mailed the self-help programme outlined in the book *Overcoming Binge Eating* (Fairburn, 1995). They were asked to read and follow the manual as best they could on their own for the next 12 weeks, and no further contact was given. In addition to the Fairburn's manual (1995), those in the GSH group received six to eight 25-min support sessions. By the end of treatment, both PSH and GSH had produced significantly greater percentages of binge abstinence compared to the control group. Whereas GSH tended to produce higher abstinence percentages than PSH at post-treatment, no significant differences in abstinence were found at 3- and 6-months follow-up. Despite changes in binge frequency, including high percentages of sustained abstinence, no changes in weight were observed for either group, reflecting the outcome of standard CBT (e.g., Fairburn et al., 2000). The study shows that both GSH and PSH are effective in improving binge frequency, even when delivered by untrained specialists.

Subsequent investigations researching variations on therapist-led self-help and pure self-help using trained and untrained therapists have produced similar results (Loeb, Wilson, Gilbert et al., 2000; Peterson et al., 1998; Peterson, Mitchell, Engbloom et al., 2001; Wilson et al., 2000), all showing a notable absence of weight loss at post-treatment (e.g., Loeb et al., 2000). Overall, a slight advantage of GSH has been found over PSH (Carter & Fairburn, 1998; Loeb et al., 2000; Palmer, Birchall, McGrain et al., 2002), although some research has found no statistically significant difference between the therapy types (Peterson et al., 1998; 2001). Further, whereas PSH and GSH using untrained facilitators are cost effective in treating BED, GSH using trained professionals may produce more favourable treatment effects (Wilson et al., 2000).

Recent research has documented an enhanced outcome when GSH is paired with obesity medication (Grilo, Masheb, & Salant, 2005). In a randomised controlled investigation, Grilo and colleagues (2005) compared GSH plus Orlistat (a lipase inhibitor) with GSH plus a placebo. A 52% binge abstinence rate was observed in both groups, but the GSH plus Orlistat group were more likely to achieve at least substantial % weight loss.

### *Summary*

CBT has been found to be successful in treating BED. However, the treatment is limited to treating only some individuals, as evidenced by the fact that not all participants produce binge abstinence by the end of treatment. Extended treatment does appear to produce improvements in initial non-responders, but, again, it does not produce abstinence in all BED participants. Further limitations include the lack of persistence of treatment effects, and notable lack of influence on weight loss.

One possible explanation for the shortfalls of CBT for BED concerns the emotional needs of the individual. At present, CBT used to treat those with BED may not deal effectively with the influence of negative affect. This failing has recently been recognised by Fairburn, Cooper and Shafran (2003) who acknowledge that traditional CBT for BED does not attend to “mood intolerance” (p. 515). Fairburn and associates (2003) define “mood intolerance” as “an inability to cope appropriately with certain

emotional states” (p. 517) They are currently assessing the efficacy of adding a supplement to the current CBT manual (Fairburn & Cooper, 1993) that deals with this previously neglected issue.

### **Interpersonal Therapy (IPT)**

IPT was originally developed by Klerman and associates (Klerman, Weissman, Rounsaville et al., 1984) as a treatment for major depression. It was adapted as a treatment for BED as interpersonal factors were thought to be involved in the etiology and maintenance of the disorder (Birchall, 1999). The assumption underlying IPT is that negative mood, low self-esteem, interpersonal functioning, and eating behaviour are linked (Fairburn, Jones, Peveler et al., 1991). The treatment is presented in 16 sessions, which are divided into three stages (Birchall, 1999). Before treatment begins, an extensive assessment is made of the patient’s current interpersonal relationships (Birchall, 1999). Depending on the results of this assessment, the therapist will choose to treat one of four problem areas: grief, role transitions, interpersonal role disputes, and interpersonal deficits (Birchall, 1999). Notably, IPT for eating disorders focuses on enhancing interpersonal functioning and mood, and indirectly influences binge frequency (Fairburn et al., 1991).

Research has documented that those with BED report interpersonal problems (Eldredge, Locke, & Horowitz, 1998; Spitzer et al., 1993) and interpersonal conflict precipitates binge episodes (Arnow et al., 1992). Poor treatment outcome of CBT is associated with greater levels of social avoidance (Eldredge et al., 1998), and interpersonal problems are related to binge episodes, rather than to obesity or being overweight (Telch & Agras, 1994). Group trials testing the efficacy of IPT in the treatment of BN and BED have produced positive outcomes. In a controlled study by Wilfley and associates (1993), IPT and CBT were compared with a control group in the treatment of BN non-purging type (BN-NP). Both treatments were attended weekly, for 90 minutes per session, for 16 sessions. Each group was assigned two therapists, trained in the relevant treatment modality for treating BN. The results showed an equally



significant reduction in binge frequency in both treatment types when compared to the wait-list control groups. Abstinence rates for the groups were 28% for CBT, 44% for IPT, and 0% for the control groups. Interestingly, whereas initial response rates to both CBT and IPT matched regarding binge eating and psychosocial adjustment, improvements regarding dieting, and shape and weight concern for those in IPT groups did not occur until later. Binge rates at one-year follow-up remained lower than at baseline, but binge days had increased significantly in both CBT and IPT groups. Neither treatment had a clinically significant influence on weight reduction, and during treatment a 2kg weight gain was measured in both treatment groups. However, by one-year follow-up, the IPT groups had lost an average of 3kg, thus a 1kg weight loss from baseline to one-year follow-up was measured. Wilfley and colleagues (2002) later replicated their study comparing BED participants' responses to CBT and IPT with a larger sample size (Wilfley et al., 2002). Again, both treatments were presented weekly, in 90-minute sessions, and consisted of 16 group sessions. An extra three individual sessions, aimed at addressing the participant's goals and progress, were added to both therapies. Considerable short and long term improvements in binge frequency and related psychosocial functioning were again observed at equal rates for both therapies. At post-treatment, CBT had produced a binge abstinence rate of 79%, while IPT had produced an abstinence rate of 73%. At 1-year follow-up these rates had dropped to 59% for CBT and 62% for IPT. Once again IPT took longer than CBT to achieve full treatment effects, and neither produced clinically significant reductions in BMI. As the study did not include a control group, it is not known how many of the participants who had achieved abstinence may have done so without treatment. Agras and associates (1995) sought to investigate whether IPT may be useful in treating those who did not previously respond to CBT (Agras, Telch, Arnow et al., 1995). After 12-weeks of group CBT treatment, those participants who did not respond were treated with 12-weeks of group IPT. Unfortunately, IPT produced no further improvements in those who had not responded to CBT. The authors documented that a poor treatment outcome was associated with early onset and more severe binge eating.

### *Summary*

IPT has produced similar results to CBT in the treatment of BED and obesity (e.g., Agras, 1995; Stunkard & Allison, 2003; Wonderlich et al., 2003). Both treatments demonstrate greater short-term efficacy in binge abstinence and binge reduction than no treatment (e.g., Wilfley et al., 1993; 2002), but neither treatment causes significant weight loss (e.g., deZwann, 2001; Agras, 1995). Interestingly, while those who respond to CBT tend to reach their peak of improvement by the end of treatment, those who respond to IPT are slower to react, but continue to improve following treatment end (Wilfley et al., 1993; 2002; Birchall, 1999). This may be due to the ongoing changes these individuals make in their interpersonal lives after the discontinuation of treatment (Birchall, 1999). The efficacy of both treatments in improving problems not directly targeted is worthy of note. For instance, in the Wilfley and colleagues study (2002), CBT produced changes in interpersonal functioning despite no specific address to interpersonal problems, and IPT resulted in improvements in cognitive disturbances regarding shape and weight without specific reference to cognition (Wilfley et al., 2002).

### **Dialectical Behaviour Therapy (DBT)**

Limitations of CBT and IPT include problems with consistent maintenance of treatment gains in the long term (Agras, 1995; Agras et al., 1997), and neither treatment alone produces weight loss (Stunkard & Allison, 2003; Wilfley et al., 1993; 2002). Furthermore, neither CBT nor IPT deals effectively with the well documented emotion regulation deficits and maladaptive coping in those with BED. Linehan's DBT focuses on increasing emotion regulation skills and can be found in her *Skills Training Manual* (1993). Its original intended purpose was for treating borderline personality disorder (Linehan, 1993; 1998), and was recently adapted for treating BED.

DBT has four main treatment components: mindfulness skills, emotional distress tolerance, emotional regulation skills, & interpersonal skills (Wiser & Telch, 1999). The weekly sessions for BED are two hours long, and last for 20 sessions. DBT assumes that

external and internal events elicit emotions, and assumes that the purpose of affect is to motivate action (McMain, Korman, & Dimeff, 2001). The emotion regulation component is aimed at aiding clients in emotional understanding, identifying various aspects of an emotional response, and defining the purpose of emotions (Wiser & Telch, 1999). Emotion dysregulation is said to stem from a combination of a genetic predisposition to vulnerability to emotions, and past experiences that have invalidated the individual's emotional expressions (McMain et al., 2001). In therapy, clients are encouraged to observe and describe their emotions in a nonjudgmental way (Linehan, 1993). This is done through identifying and labelling their emotions, identifying obstacles to changing their emotions, reducing emotional vulnerability by decreasing stress and taking care of their physical health, increasing positive emotional experiences, experiencing emotions without judging them or trying to inhibit them, acting in a way that opposes or is inconsistent with the emotion so that a different emotion is expressed, and increasing distress tolerance by perceiving one's emotions without putting action demands on the experience (Linehan, 1993). Linehan (1993) notes that actively behaving in a way that opposes how one feels does not include emotion suppression, it involves encouraging a different emotion through action.

In 1997, Telch investigated the effect of DBT used for treating a 36-year old, married, Caucasian woman diagnosed with BED. Treatment was aimed at developing the skills for adaptive affect regulation, and was divided into 23, 50-minute, sessions. At the end of treatment, the patient no longer met the criteria for BED, although she did continue to have episodes of controlled overeating. The patient's weight fluctuated significantly throughout treatment, but once binge frequency had decreased, she did not gain more weight. By her final visit for treatment, the patient had lost 1.8kg of the 7.3kg that she had gained at the start of treatment when she continued to binge frequently. Group studies have also indicated DBT is effective in achieving abstinence from binge eating (Telch, Agras, & Linehan, 2000; 2001). Telch and associates (2000) performed an uncontrolled trial investigating DBT in the treatment of 11 women diagnosed with BED. At the end of treatment, 82% had achieved binge abstinence for the previous 4 weeks, and at 3-months follow-up 80% women available for the assessment had continued to abstain and no longer met the criteria for BED. At 6-months follow-up, 70% were still

abstinent from binge eating. In a subsequent controlled study, Telch and associates (2001) produced an 89% abstinence rate compared to 12.5% of the wait-list control group. Safer and associates (2002) investigated the factors that contribute to relapse of abstinence (Safer, Lively, Telch et al., 2002). The two main predictors of relapse were early onset of binge eating, defined as at or before the age of 16, and high scores on the restraint subscale of the EDE (Fairburn & Cooper, 1993). This study indicates that DBT produces treatment effects that are maintained well after treatment ends. Future research documenting the long term maintenance of DBT beyond six months is required.

### *Summary*

DBT has shown promising results in the treatment of BED, but it is not yet known exactly how DBT adapted for BED works, and why it appears to work for some individuals but not for others (Safer et al., 2002). DBT is a long-term therapy that lasts up to six months (Telch, 1997). It is possible that a shorter, less complex treatment that focuses on dealing with emotional deficits may produce similar results in treating binge eating symptomatology. Further, the long term treatment effects past 6-months, and long term weight loss produced using DBT, are unknown.

### **Psychoeducational Therapy (PET)**

Like guided self-help, PET requires fewer staff to implement (Peterson et al., 1998), and less staff training than conventional therapy (Carter & Fairburn, 1998; Fairburn & Carter, 1996). Thus PET for BED is less costly than specialised, one-on-one therapy (Wilson et al., 2000). The aim of psychoeducation, when used for treatment of eating disorders, is to normalise eating patterns, and to address weight and shape concerns (Smith, Marcus, & Eldredge, 1994; Wilson et al., 2000). This is done through educational instruction using cognitive-behavioural strategies that are aimed at change (Latner & Wilson, 2000; Wilson et al., 2000). It has been found to be an effective treatment modality for BED, and can be executed successfully by a therapist, by self-help

manuals, and by video tapes (Peterson et al., 1998). Augmenting PET with homework exercises that clients complete in their own time has been found to be useful (Peterson et al., 1998; 2001).

A recent study by Ciano and associates (Ciano, Rocco, Angarano et al., 2002) assessed the efficacy of using group PET to treat those with BED. The intervention gave training in nutrition, communication and assertion skills through role playing, and problem solving. Ten sessions were given over a period of ten weeks. The treatment proved successful at improving alexithymic traits, and reduced binge episode frequencies. Further, such effects were maintained at 12 months follow-up. The authors also suggested that group therapy has the added benefit of enhancing social skills, thus dealing with the interpersonal difficulties noted in those with BED. Despite these positive results, a small sample of just five women with BED, and a notable absence of a wait-list control group, impede the strength of the conclusions that can be made from this study. Further, the study employed a psychiatrist, a psychologist, and a dietician to lead the therapy. Such professional resources would be costly and may not be necessary to produce similar treatment effects. Nevertheless, previous studies examining the efficacy of employing psychoeducation as a treatment modality for BED (e.g., Peterson et al., 1998; 2001), and BN (e.g., Davis, McVey, Heinmaa et al., 1999; Davis, Olmsted, & Rockert, 1990), have shown that it may be an effective therapy for some eating disorders. Using a mix of approaches, Peterson and associates (1998) compared combined psychoeducational techniques and group discussion with no treatment. Treatment was CBT based and consisted of 14 sessions in 8 weeks, where the first 6 weeks covered two sessions per week. Each session was an hour long, in which the first half hour was psychoeducational information and the second half hour was group discussion with a focus on reviewing homework. Participants were divided into one of four groups: a therapist-led (TL) group ( $n = 16$ ); a partial self-help (PSH) group ( $n = 19$ ); a structured self-help (SH) group ( $n = 15$ ); and a wait-list (WL) group ( $n = 11$ ). Whereas the TL group received guidance for the whole hour of treatment, the PSH group watched a video tape of the therapist leading the psychoeducational half of each session, and then the therapist led the group discussion for the second half of each session in person. The SH group watched the same video tape of the psychoeducational material, and led their own discussions, while the

WL received no treatment intervention. All treatment groups significantly reduced binge eating compared to the WL control group. In a follow-up investigation, the participants from the Peterson and colleagues study (1998) were assessed up to 12 months after treatment ended (Peterson et al., 2001). Treatment effects measured in the original study were found to be maintained one year post-treatment, demonstrating that PET may produce long-lasting improvements in binge eating, although replication studies are needed (Peterson et al., 2001).

### *Summary*

Although not as well studied as CBT and IPT, PET has thus far proven to be an efficacious treatment mode for significantly improving binge eating and alexithymia for BED, and effects appear to last for at least one year after treatment ends (Ciano et al., 2002; Peterson et al., 1998; 2001). However, further randomised well-controlled trials are needed.

## CHAPTER FOUR:

### Study One;

#### *Efficacy of the Treatment with Women*

Research has shown that BED is responsive to many treatments (Stunkard & Allison, 2003), and promising results have been demonstrated using CBT, IPT and DBT in particular. In brief, CBT uses techniques to create balance in eating and lifestyle patterns (Fairburn et al., 1993). Techniques include obesity education, modification of eating and approach to food, introduction to exercise, and establishing balance between activities that must be done and activities that are desirable. CBT has produced a binge abstinence rate of approximately 80% (e.g., Agras et al., 1997). However, documented treatment effects are maintained by only 46% at 20 weeks after treatment, and 45% at one year follow-up (Agras et al., 1997), demonstrating that CBT for BED is not well-maintained after treatment ends.

IPT was originally developed as a treatment for major depression by Klerman and colleagues (1984), and was considered a viable option for treating BED due to the interpersonal functioning deficits documented in those with the eating disorder (Birchall, 1999). Based on an extensive exploration of the patient's interpersonal functioning, one of four treatment options will be chosen from grief, role transitions, interpersonal role disputes, and interpersonal deficits (Birchall, 1999). Interestingly, the treatment does not directly focus on binge abstinence or issues relating to food but instead influences these indirectly (Fairburn et al., 1991). Overall, treatment effects of IPT are comparable to those of CBT (e.g., Wilfley et al., 1993; 2002). Wilfley and associates (1993) treated participants with either CBT or IPT, and documented that 28% of the CBT and 44% of the IPT groups had achieved binge abstinence, a difference that was not found to be significant. At one year follow-up, both of the groups had significantly increased the number of binge days. Whereas abstinence rates at one year were not reported, the increase in binge days indicates that IPT is also not well maintained in the long term. Wilfley and colleagues (2002) later replicated their study comparing BED participants' response to CBT and IPT with a larger sample size. At post-treatment, CBT had produced a binge abstinence rate of 79%, while IPT had produced an abstinence rate of 73%. At

one-year follow-up, 20% of the CBT group and 11% of the IPT group had relapsed and were no longer abstinent, showing that treatment effects for these interventions do drop a bit over time.

The Affect Regulation Model assumes that emotion, particularly negative emotion, is contributory to the etiology and maintenance of BED (e.g., Stice et al., 2000). Binge eating is thought to be a maladaptive coping attempt for dealing with distressing affect (e.g., Stice et al., 2000), and that binge eating reduces distress by either distracting the binge eater from their emotions (Stice et al., 2001) or by reducing their awareness of their feelings (Lacey, 1986). Negative affect has been frequently documented as an antecedent to binge episodes (e.g., Arnow et al., 1992; Deaver et al., 2003), including sadness, anxiety and anger (e.g., Arnow et al., 1992), providing support for the Affect Regulation Model.

It has been suggested that a possible reason for relapse in those with BED who have been treated with CBT (e.g., Fairburn et al., 2003) or IPT (Telch, 1997; Telch et al., 2000) is due to the failure of the treatments to address affect regulation deficits. DBT, an intervention originally developed for treating borderline personality disorder (Linehan, 1993; 1998), was later used to treat BED. The focus of the intervention is not on binge abstinence as it is for CBT, but on introducing affect recognition and regulation skills (Wiser & Telch, 1999). A positive outcome of DBT for BED has been documented, and up to 89% binge abstinence rate has been recorded, but, unfortunately, approximately 28% of those have been shown to relapse (Telch et al., 2001). It is not yet known how DBT for BED works, and why it works for some and not others (Safer et al., 2002). Further, the treatment requires a long term commitment from patients as the treatment lasts up to six months (Telch et al., 1997).

PET for BED focuses on normalising eating patterns and reducing weight and shape concerns (e.g., Wilson et al., 2000), and uses educational instruction of cognitive-behavioural techniques (Latner & Wilson, 2000; Wilson et al., 2000). It has been found to produce positive treatment effects for those with BED (Peterson et al., 1998), including improving alexithymic traits and reducing bingeing frequency, and treatment effects appear to be well maintained up to one year after treatment (Ciano et al., 2002; Peterson et al., 1998; 2001). Therapists, self-help manuals, and video tapes have been found to be



successful modes for PET (Peterson et al., 1998), making it a cost-effective treatment approach (Wilson et al., 2000).

The current study aimed to test the efficacy of a psychoeducational treatment that teaches emotional recognition and management skills to women with binge eating and related symptoms. The treatment incorporates aspects from CBT for BED (including nutrition and meal planning guidance, self-monitoring, problem solving and treatment maintenance), IPT (assertion training), and some aspects of DBT (affect recognition). A large portion of the emotion discrimination training was developed by the author and Mr. Neville Blampied, where facial expression, behavioural and physiological responses to situations are used as cues for recognising affect. Relaxation training and recognising a binge were added based on indications from research that they would be useful (e.g., Crowther, Sanftner, Bonifazi et al., 2001; Johnson et al., 1997). The present study is a replication and extension of a previous study (Clyne & Blampied, 2004), and several changes have been made: whereas the Clyne and Blampied study treated only 11 women, and did not include a control group, the current study aimed to include more participants and a control group; the Clyne and Blampied investigation used the QEWP and the BES to assess the presence of binge eating, this study intended to use a clinical interview to diagnose BED; lastly, the Clyne and Blampied study followed participants up to three months after treatment ended, the present investigation aimed to follow participants up to one year later.

The second aim of the present study was to compare the responses of participants with subthreshold and threshold BED. Whereas some studies have included participants with subthreshold BED (e.g., Ghaderi & Scott, 2003), treatment response comparisons between subthreshold and threshold have not been performed. Subthreshold and threshold BED were compared on measures of eating and related general pathology before treatment, then comparisons were made between the eating syndromes at post-treatment and at follow-up assessments. Given that previous research has found few differences between the groups on measures of eating and related pathology (e.g., Crow et al., 2002; Martin et al., 2000), it was thought that these symptoms would be the same in subthreshold and threshold BED before treatment, and that the two groups would respond similarly to treatment.

## Method

### *Participant Recruitment*

A rigorous advertising campaign was performed to recruit female volunteer participants from Christchurch, New Zealand. Notices were posted in the psychology department, health services, counselling services, and halls of residence at the University of Canterbury. Notices were also posted on the counselling service notice boards at the College of Education, the Eating Awareness Team, the Health Alternatives for Women, Rata Counselling Services, and the Diabetes Centre, and at the offices of the Presbyterian Support Services and the Catholic Service Centre. Further, advertisement notices were posted in several retail outlets and small notices were written on display boards in several supermarkets. A large advert, with an accompanying editorial describing binge eating disorder, was placed in three local free newspapers on November 2<sup>nd</sup> 2003, and again on November 30<sup>th</sup> 2003 (Appendix 1). *The Observer*, *The News Advertiser*, and *The Pegasus Post* are circulated to the majority of Christchurch residents. A small notice was placed in the Princess Margaret Hospital eating disorders unit newsletter. Lastly, small notices were placed in the classified news paper *The Buy Sell and Exchange*, and in *The Bromley local newsletter*.

### *Procedure*

*Selection Procedures.* Women, aged between 18 and 65 years, were initially invited to come to the University of Canterbury to fill in the QEWP (Spitzer et al., 1993). Those who met all of the criteria for BED as outlined by Spitzer and associates (1993) on the QEWP were asked to return for the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993).

EDE interviews were conducted by the author, Courtney Clyne, and audio tape recordings of the first five interviews were evaluated by her supervisor, Dr Janet Latner. For the sake of efficiency, questions used for diagnosis were retained from the interview schedule, while those used for assessing related eating, weight and shape overconcern,

and restraint were omitted. These were assessed instead using the questionnaire form of the EDE, the EDE-Q (Fairburn & Beglin, 1994).

Women who met all the criteria for BED according to the EDE and met the remaining DSM-IV-TR criteria (three or more of the following: eating much more rapidly than normal; eating until uncomfortably full; eating large amounts of food when not feeling physically hungry; eating alone because of being embarrassed by how much one is eating; and/or feeling disgusted with oneself, depressed, or very guilty after overeating (APA, 2000)) were diagnosed with threshold BED. Women who met all the criteria for BED according to the EDE and the additional DSM-IV-TR criteria, but who binged less than twice per week but no less than once in the past 28 days, and/or whose binges were classified as subjective bulimic episodes, were diagnosed with subthreshold BED. Women meeting the criteria for subthreshold or threshold BED were included in this study, and were assigned to either a treatment group (TG) or wait-list (WL) control group. The EDE-Q (Fairburn & Beglin, 1994) was used to assess levels of restraint, eating concerns, and shape and weight concerns. Levels of emotional eating were measured using the Emotional Eating Scale (EES; Arnow, Kenardy & Agras, 1995).

Women who reported purging and/or compensatory behaviours to control their shape or weight in the QEWP (as outlined by Spitzer et al., 1993), were not included in the study, and were not assessed using the EDE. Instead, a letter was sent to outlining the assessment results (see Appendix 2), advising them to consult their physician regarding these findings, and they were offered alternative treatment facilities to contact. Women who exhibited symptoms for anorexia nervosa, including frequent occurrence of fasting, and extreme exercise behaviours in the QEWP (as outlined by Spitzer et al., 1993), were also excluded from the study, and were offered referrals to alternative treatment facilities.

Using self-report questionnaires, measurements of depression, anxiety, stress and perceived stress, coping ability, and attention to, and attitude towards, emotion regulation were taken at pre-treatment and post-treatment, and at 3, 6, and 12-months follow-up. Reassessments of diagnostic status, binge eating symptoms and other eating pathology, and emotional eating were also taken at follow-ups.

### *Selection Instruments*

#### *Questionnaire on Eating and Weight Patterns NZ (QEWP; Spitzer et al., 1993).*

The QEWP is a standard self-report questionnaire which measures binge eating and bulimic symptoms, and focuses on the past 6 months. It contains 28 questions scored in accordance with the proposed diagnostic criteria for BED outlined in the DSM-IV (APA, 1994). Scores of the QEWP have demonstrated moderate concurrent validity (Spitzer et al., 1993), but only fair convergent validity (Gladis, Wadden, Foster, Vogt et al., 1998). The measure was used as a screening tool in the present study because scores on the QEWP has been found to misclassify some individuals as having BED when they do not. However, Gladis and associates (1998) found it to be a useful instrument for identifying binge episodes in accordance with DSM-IV criteria (Gladis et al., 1998).

The language of the items was modified to fit New Zealand conventions, including using metric equivalents to measurements and weights, and using brand names of food commonly found in New Zealand, to make it easier for the participants to answer (see Appendix 3). As the intervention lasted less than six months, changes were made to the time frame in which participants were asked if they “often ate within any two hour period what most people would consider an unusually large amount of food”. For this question, and any others relating to recent binge episodes, the original time frame was changed from six months to two months at post-treatment and at 3-months follow-up. At the 6-month and 12-month follow-ups, the original time frame of 6-months was used.

*The Eating Disorders Examination (EDE; Fairburn & Cooper, 1993).* The EDE is a semi-structured clinical interview, and is considered the “gold standard” for diagnosing eating disorders (e.g., Fairburn & Beglin, 1994). It contains items intended for the use of diagnosing specific eating disorders for the preceding 3 months. Detailed information regarding the frequency and extent of pathological eating are taken, and binge episodes are classified as objective bulimic episodes (consumption of a large quantity of food with a sense of loss of control), subjective bulimic episodes (consumption of an amount of food that is not considered large given the circumstances with a sense of loss of control) and objective overeating (consumption of a large amount

of food without a sense of loss of control). Numerous investigations have tested the reliability and validity of the EDE, and scores produced by the measure supported the use of it in research and clinical practices (e.g., Fairburn & Cooper, 1993; Wilson, 1993).

The EDE, supplemented with questions from the DSM-IV-TR (APA, 2000), was used to diagnose participants with threshold or subthreshold BED.

*The Eating Disorders Examination- Questionnaire (EDE-Q; Fairburn & Beglin, 1994).* Binge eating (e.g., APA, 2000), and shape and weight overvaluation (e.g., Crow et al., 2002; Stunkard & Allison, 2003) have been shown to be prevalent in those with BED. The EDE-Q provides information regarding the participant's diagnostic status in the past 28 days, and subscales measuring restraint, eating concern, shape concern and weight concern are included. Two scales are used: one which measures number of days (0, 1-5, 6-12, 13-15, 16-22, 23-27, and every day); and one which uses a 7-point Likert scale (0-6, from "slightly" to "markedly").

EDE-Q subscale scores have been shown to have excellent internal consistency (Luce & Crowther, 1999), and are significantly correlated with scores produced by the EDE (Grilo, Masheb, & Wilson, 2001). The test-retest reliability of the measure in assessing binge episodes, particularly subjective bulimic episodes, is questionable (e.g., Reas et al., 2006). Thus, the EDE was used to assess binge eating and to establish diagnoses. Scores from the EDE-Q subscales tend to be higher than those of the EDE (e.g., Grilo et al., 2001; Wilfley, Schwartz, Spurrell et al., 1997), thus mean scores were not compared to normative data, but were instead compared across assessments.

### *Measurements of Other Symptoms*

*The Emotional Eating Scale (EES; Arnow et al., 1995).* Research (e.g., Arnow et al., 1992; Deaver et al., 2003; Stice et al., 2001) has shown that emotional eating occurs with regularity in those with BED. The EES is a 25-item scale that was designed to measure the intensity of the relationship between negative affect and eating (Arnow et al., 1995). The EES uses a 5-point scale, scored from 0-4: "no desire to eat"; "a small desire to eat"; "a moderate desire to eat"; "a strong desire to eat"; and "an overwhelming urge to

eat”. A higher score indicates a greater tendency to eat in response to emotional antecedents (Waller & Osman, 1998). The scale contains 3 subscales: anger/frustration, anxiety, and depression. As the meaning of the total score is unclear, the authors suggest reporting results by subscale (Arnow et al., 1995). Research has demonstrated that scores generated by the EES subscales have good internal consistency (Arnow et al., 1995; Waller & Osman, 1998) and temporal stability (Arnow et al., 1995), and have discriminant validity (Arnow et al., 1995).

*The Binge Eating Scale (BES; Gormally et al., 1982).* The BES is a self-report measure of the presence and severity of behavioural and cognitive characteristics of binge eating. It is a 16-item questionnaire, and each item has 4-point Likert scale. Item scores range from 0-3, where 0 indicates no binge problems, and 3 indicates a severe binge problem. The BES has been widely used in research on BED (Gladis et al., 1998), and scores produced by the scale have high internal consistency (Gormally et al., 1982).

*The Toronto Alexithymia Scale-20 (TAS; Parker, Bagby, Taylor, Endler, et al., 1993).* Alexithymia has been shown to be greater in those with BED than controls, and at similar levels to those with other eating disorders (Pinaquay et al., 2003). The 20-item TAS is a multidimensional self-report questionnaire designed to assess levels of alexithymia, and was derived from the original 26-item questionnaire (TAS-26; Taylor, Ryan, & Bagby, 1985). Scores from the TAS-26 have demonstrated good internal consistency and test-retest reliability, however data have shown that some items cross-loaded significantly on two factors (Bagby, Parker & Taylor, 1994). Subsequently, the TAS-26 was revised and the TAS-20 was devised. The three factors on the TAS-20 include difficulty identifying and distinguishing between feelings and bodily sensations, difficulty describing feelings, and externally-oriented thinking. The measure employs a 5-point Likert scale, from 1-5 (“strongly disagree” to “strongly agree”), with an empirically derived cut-off score of  $\leq 61$  (Taylor, Parker, Bagby et al., 1996). Scores from the TAS-20 have demonstrated good internal consistency and test-retest reliability (Bagby et al., 1994), and evidence of convergent and discriminant validity has been found (Bagby, Taylor, & Parker, 1994; Parker, Taylor, & Bagby, 2003).

*Self-Monitoring.* Participants were asked to monitor and record all overeating episodes that were accompanied by a sense of loss of control from the day they were recruited for the study (see Appendix 5). The time, type (including brand names), and an estimation of the amount of the food or drink consumed were recorded. Behavioural and emotional antecedents and consequences were also recorded. As participants were recruited at different times, differing lengths of baseline recording were taken. One week before starting treatment, participants were asked to also monitor all food intake, while continuing to record overeating episodes with a sense of loss of control. Recording of all food consumed lasted for two weeks, while monitoring of overeating episodes lasted from the time of recruitment to the end of treatment.

#### *Follow-Up Assessments*

Diagnoses were established using the shortened version of the EDE, and associated symptoms were assessed using the EDE-Q, BES, EES, and TAS.

#### *Wait List*

Participants were originally assigned to one of two groups; the treatment group (TG) who began treatment immediately following their first assessment, or the wait-list control group (WL) who started treatment after the TG had completed treatment. The WL began treatment 3-months after their initial assessment and continued to monitor binge episodes from the day of recruitment.

The participant was considered to have “dropped-out” of treatment when he or she decided to no longer engage in the study after the intervention had begun. “Treatment completers” were those who had attended all sessions of the treatment programme. In the case where they could not attend a session, the participant then either joined another group for the session they had missed, or had a catch-up session with the author on their own. No participant considered a treatment completer needed to catch up more than two sessions over the course of treatment. As a high drop-out rate was observed in the WL, a

second intake of participants was conducted. Those recruited after the first intake were assigned to the WL so that the TG and WL did not highly differ in numbers.

### *Treatment Procedure*

The treatment was a manualised programme that combined aspects of psychoeducation and group therapy. Weekly treatment sessions were carried out by the author. Her experience with conducting the treatment was gained through her Masters, which involved administering the treatment package to three groups.

Each session lasted up to two hours each, and began with a review of participants' self-monitoring records and homework tasks. Ten sessions were conducted over 12 weeks and self-monitoring, binge recognition, basic nutrition, emotional recognition, and emotion regulation using relaxation training, problem solving, and assertion training were covered. The programme ended with one and a half sessions of maintenance and relapse prevention.

*Self-monitoring.* Self-monitoring is a key component used in the CBT comprehensive manual for binge eating and bulimia nervosa (Fairburn et al., 1993), and is widely used in research studies on BED (e.g., Marchesini et al., 2002; Pendelton Goodrick, Poston et al., 2002). It can be used to monitor current eating patterns (Latner & Wilson, 2002; Wilson & Vitousek, 1999), particularly antecedents and consequences of binge episodes (Stickney & Miltenberger, 1999), to aid understanding of various aspects of eating disorders (Marcus, 1996; Wilson & Vitousek, 1999), or to influence eating behaviours (Latner & Wilson, 2002). It can also be used as a planned self-regulation strategy (Wilson & Vitousek, 1999), and to change binge eating behaviour that may have previously seemed automatic or uncontrollable (Fairburn et al., 1993; Sarafino, 1996). Self-monitoring can also be used to assess associated mood states or cognitions (Wilson & Vitousek, 1999), and allows researchers and therapists to assess an individual's needs and progress during treatment (Wilson & Vitousek, 1999). Whereas there is some debate over whether obese binge eaters accurately report food intake, prevailing evidence



suggests that self-monitoring reports taken from these populations tend to be accurate (Wilson & Vitousek, 1999).

A brief overview covering the basics of self-monitoring was presented, including the importance of accuracy, immediacy, and honesty of reports. An example monitoring sheet was given with a detailed description of how to use the forms correctly.

*Overview of Binge Recognition.* As it has often been noted in the literature that there are discrepancies in how participants and researchers define binge episodes, the first half of the second session explained recognising binge episodes. This allowed the participants to discriminate more effectively between normal meals, snacks, and binge episodes.

*Basic Nutrition.* Skipping lunch, snacking in the afternoon, eating supper, and snacking in the evening, have all been cited as important risk factors for a binge episode (Johnston et al., 1995). It has been argued that binge eaters not only eat more during normal meals (Wilson & Fairburn, 1998; Rossiter, Agras, Telch et al., 1992; Yanovski & Sebring, 1994), but they may not realise the value in eating regularly (Peterson & Mitchell, 1996). Accordingly, a main focus of CBT treatment is the normalisation of eating patterns (Fairburn et al., 1993). Agras (1995) argues that therapists should help the patient reduce the length of time between their meals, expand their food choices, and should help patients choose foods with lower fat content.

The second half of the second session included psychoeducation about basic nutrition, emphasising the importance of eating regularly. Using the monitoring forms from the previous week, comparisons were made between the participants' current eating patterns and those that were recommended. Suggestions for improvement were made, with the goal of eliminating binge eating as the focus. Distraction techniques were also discussed, with the primary aim of curbing the urge to binge.

*Emotional Recognition Component.* The emotional recognition component was divided into two sessions. The third session covered the influence of emotions on precipitating binge episodes, the reasons for eating in response to emotions, and the

negative consequences of using food to cope with emotional distress. A description of the physiological changes that occur during happiness, love, fear, surprise, anger, and sadness was given. Five minutes was allotted to a writing exercise, focussing on how the participants generally feel after binge eating, and how they feel, or might feel, after resisting the urge to binge. The aim of this exercise was two-fold: to encourage participants to consider how they feel after a typical binge; and to encourage them to compare how they feel after bingeing with how they feel after resisting. As they were advised to consider these feelings immediately before a binge, and if they did binge, immediately afterwards, it was expected that the negative emotional consequences of bingeing would act as a punisher and make future binges less likely, while resistance would produce positive emotional consequences, in turn reinforcing future resistance efforts.

The fourth session covered emotional discrimination using psychological and physiological cues.

*Relaxation Training.* Stress often accompanies emotional distress, and thus stress may indirectly trigger binge episodes (e.g., Crowther et al., 2001). Thus, binge eating can be thought as a coping response to stress (Arnou et al., 1992; Telch, 1997), or as a maladaptive emotion-regulation strategy (Fairburn et al., 2003; Wiser & Telch, 1999).

Relaxation training was run over two sessions, focussing on Progressive Muscle Relaxation, deep breathing exercises, and differential relaxation skills.

*Problem Solving Skills.* Binge episodes are often precipitated by adverse affect, often provoked by an external problem (Fairburn et al., 1993). It has been suggested that disordered eating behaviour can be reduced by replacing ineffective coping styles, such as emotion-focused or avoidance coping, with more effective coping styles, such as problem-focused coping (e.g., Troop, Holbrey, Trowler et al., 1994). Problem-focused coping involves taking direct action to solve the problem, or seeking information that will be relevant to the problem (Davison & Neale, 1998).

The seventh session taught problem solving strategies, with the primary aim of replacing maladaptive coping strategies with more adaptive ones. Several problem solving strategies were taught, including a disclosure writing task. The task involves

writing about one's thoughts and feelings regarding a stressful event, and selecting ways in which one can cope with the stressful situation (Cameron & Nicholls, 1998). Writing about personally upsetting or traumatic experiences has been shown to produce significant improvements in physical health (King, 2002; Pennebaker, 1993; Pennebaker & Beall, 1986).

*Assertiveness Training.* Those with binge eating problems have deficits in interpersonal skills (e.g., Eldredge et al., 1998; Fairburn et al., 2003), and fear interpersonal conflict, social judgement and rejection, and have a perceived lack of social support (e.g., Eldredge et al., 1998; Wilfley et al., 1993). Interpersonal interactions often trigger the negative affect that may precipitate binge episodes (Heatherton & Baumeister, 1991).

Assertiveness training was taught over two sessions. In the eighth and ninth sessions, the purpose of assertiveness, and the link between nonassertive behaviour and binge eating, were taught.

*Maintenance and Relapse Prevention.* Despite the effectiveness of various treatments, one of the notable limitations of many of the existing treatments for binge eating problems is that the treatment effects do not last (Agras, 1995; Agras et al., 1997). Studies employing relapse prevention techniques to aid maintenance of treatment effects are common (e.g., Fairburn, 1995; Peterson et al., 2001; Wolff & Clark, 2001).

The programme ended with one and a half sessions on maintenance and relapse prevention. The second half of the ninth session reviewed the programme and allowed the participants the opportunity to specify areas of the treatment they continued to find problematic. The tenth covered relapse prevention. Each participant was asked to identify any future situations that may lead to a binge. Options for coping responses learned throughout the programme were discussed, and each option was evaluated for likely positive and negative consequences. The participant was advised to write the problem and the coping response options down to be referred to when required.

### *Statistical Analyses*

Attrition and changes in BMI for the WL and TG combined were analysed using multivariate analyses of variance (MANOVAs). Changes in diagnostic status were recorded and described for baseline (WL only) to pre- and post-treatment and across follow-ups (WL and TG).

In order to determine whether the TG had changed significantly from pre-treatment to post-treatment relative to the WL, analyses of covariance (ANCOVA) were computed for each variable. For each ANCOVA, pre-treatment scores were the covariates. Effect sizes (partial eta squared) were obtained to determine the magnitude of change. Nine variables were analysed: the EDE-Q four subscales; the BES; and the EES (three subscales and total score).

To test whether the treatment effects were maintained from post-treatment to 12-months follow-up, repeated measures ANOVAs were computed for ten variables: the EDE-Q four subscales; the BES; the EES (three subscales and total score), and the TAS. The univariate analyses were computed using data from the TG only (referred to as “not combined”), and also using data from the TG and WL combined, and tested for change from post-treatment across 3-, 6- and 12-months follow-up. Effect sizes (partial eta squared) were also obtained.

Self-monitoring data were firstly recorded as self-reported binge episodes, then were categorised by the investigator as either subjective bulimic episodes (SBEs) or objective bulimic episodes (OBEs). To be classified as an OBE, the episode had to meet criteria outlined by Fairburn and Cooper (1993). To be classified as an SBE, the amount of food consumed in the episode had to fall short of the criteria for an OBE. The changes in self-reported binge episodes, SBEs, and OBEs were described in the results. Descriptions in the changes observed in abstinence were also given.

Differences between subthreshold and threshold BED were assessed: including differences in BMI (which were assessed using partial eta squared effect sizes) and differences in diagnostic status at pre- and post-treatment and across follow-ups were described. Further, severity of eating and related pathological symptoms of subthreshold and threshold BED were compared at pre-treatment to test whether diagnostic status

determined the severity of the related symptoms, at post-treatment to test whether there was a difference in response to treatment between the groups, and at 3-, 6-, and 12-months follow-up to determine whether there were any differences in the maintenance of treatment effects. Comparisons were performed using partial eta squared effect sizes.

## **Results**

The results of Study One are presented in two major sections. The first (Part I) is as follows: a description of the outcome of the participant recruitment phase, and attrition throughout the study; the demographic data of the participants; changes in BMI then diagnostic status across assessments; pre- and post-treatment ANCOVAs; ANOVAs comparing post-treatment and follow-ups; and changes in self-monitoring then abstinence rates. The second (Part II) assesses the differences between subthreshold and threshold BED on several levels, including: comparisons between the groups on BMI; description of the changes in diagnostic status; eating and general pathology effect sizes at each assessment point; and ANOVAs testing the subthreshold participants' response to treatment.

Of the 101 women who responded to advertising, a total of 80 answered the BES and the QEWP. Of these, 40 were excluded from the study (24 reported purging, laxative use, or fasting as a means of controlling their shape and weight, and 16 did not fit the criteria for an eating disorder). Of the remaining 40 participants, one was assigned to TG and chose not to continue before treatment began, 12 were assigned to the WL and chose not to continue during the three months baseline, and four chose not to continue after beginning treatment. Those assigned to the TG who either did not start treatment or began treatment but discontinued part way through cited being too busy, or too stressed (for reasons unrelated to treatment), as their main reasons. Those assigned to the WL, and who chose not to continue during baseline, cited the cumbersome nature of self-monitoring for an extended period of time, and not being ready for treatment, as their main reasons for discontinuing. Thus, 23 women completed treatment: 11 women in the WL and 12 women in the TG. The three treatment groups had two, six, and four

participants respectively. The three wait-list groups had three, five, and three participants respectively.

Threshold BED was diagnosed in accordance with the proposed criteria in the DSM-IV-TR (APA, 2000), including objectively large binge eating on average at least two days per week, accompanied by a sense of loss of control, marked distress, and three or more of the following: eating much more rapidly than normal; eating until uncomfortably full; eating large amounts of food when not feeling physically hungry; eating alone because of being embarrassed by how much one is eating; and/or feeling disgusted with oneself, depressed, or very guilty after overeating. Subthreshold BED was diagnosed if all inclusion criteria were met except below threshold binge eating size and/or frequency.

## **Part I**

### *Attrition*

Of those women who dropped out of the study before it began, or dropped out after they had begun treatment, 59% were subthreshold and 41% were threshold BED. Using a one-way MANOVA to compare those who completed the study and those who dropped out, no differences were found on the BES, EES subscales and total score, and the EDE-Q subscales [ $F(9,30) = 1.36, p = 0.251$ ], indicating that treatment completers and non-completers did not differ on severity of eating and related pathology and that the sample was not biased.

### *Demographics*

*General.* Demographic characteristics, shown in Table 1, were similar between the TG and the WL. An independent means t-test revealed no significant difference existed between the groups on age.

Table 1  
*Age, Ethnicity, and Education Level of Treatment and Wait-list Control Groups*

	Treatment Group <sup>a</sup>	Wait-list Control Group <sup>b</sup>
Age		
Mean	34.58 (SD = 7.81)	40.82 (SD = 6.43)
Ethnicity		
NZ European/other European	10	11
NZ Maori	1	0
Other	1	0
Education Level		
High School (or less)	6	5
University-graduate	6	6
BMI		
Normal/Overweight	10	7
Obese	2	4

<sup>a</sup>  $n = 12$    <sup>b</sup>  $n = 11$

*Changes in BMI.* Normal and overweight is defined as a BMI of  $\geq 18.5 \leq 29.9$ , obesity is defined as a BMI of  $\geq 30 \leq 39.9$ , and severe obesity is defined as a BMI of  $\geq 40$  (National Heart, Lung, and Blood Institute, 1998).

Pre-treatment, 17 participants were of normal or overweight BMI, and six were obese. At post-treatment, 14 participants were of normal or overweight BMI, and nine were obese. This increase in BMI for three participants reflects the steady increase in weight demonstrated by those with BED (e.g., Wilfley et al., 2002). However, at 3-months follow-up 16 participants were of normal or overweight BMI, and only seven were obese, indicating the steady increase in weight had halted for two of the three participants. At 6-months follow-up, 15 participants were of normal or overweight BMI, and seven were obese. At 12-months follow-up, 15 participants were of normal or overweight BMI, and seven were obese.

At no stage were any of the participants categorised as severely obese. As two participants were pregnant during some of the follow-up assessments, their last BMI recorded was used instead of their current BMI during those times.

The BMI data for the TG and WL were combined to increase the power of the repeated measures multivariate analysis of variance. The MANOVA showed no main effect for time on BMI from baseline to 12-months follow-up.

### *Diagnostic Status*

*The Wait-List Control Group.* All participants met the diagnostic criteria for either full-syndrome BED or subthreshold BED at baseline; eight participants were diagnosed with subthreshold BED, and three were diagnosed with threshold BED. Following 3-months baseline, at the assessment taken at pre-treatment two of the three participants diagnosed with threshold BED had improved, and were subsequently diagnosed with subthreshold BED (see Table 2). By 12-months follow-up, only two participants in the WL continued to meet the criteria for subthreshold BED, and none met the criteria for threshold BED.

Table 2

*The WL Diagnostic Status at Baseline, Pre- and Post-Treatment, and Across Follow-ups*

<b>Participant</b>	<b>Baseline</b>	<b>Pre-Treatment</b>	<b>Post-Treatment</b>	<b>3-Months Follow-up</b>	<b>6-Months Follow-up</b>	<b>12-Months Follow-up</b>
1	Thres	Sub	Sub	None	Sub	Sub
2	Sub	Sub	None	None	None	None
3	Sub	Sub	None	Sub	Sub	None
4	Thres	Sub	None	None	None	None
5	Thres	Thres	Sub	None	None	None
6	Sub	Sub	None	None	None	None
7	Sub	Sub	None	None	None	None
8	Sub	Sub	None	None	None	None
9	Sub	Sub	None	None	None	None
10	Sub	Sub	Sub	None	None	Sub
11	Sub	Sub	None	None	None	None

Note: Thres = Threshold BED  
 Sub = Subthreshold BED  
 None = No BED Diagnosis



*The Treatment Group.* All participants met the diagnostic criteria for either full-syndrome BED or subthreshold BED at pre-treatment; nine participants were diagnosed with subthreshold BED, and three were diagnosed with threshold BED (see Table 3). At post-treatment, two of the participants continued to meet the criteria for subthreshold BED, but the remaining ten did not meet the criteria for BED. Fluctuations at 3-months follow-up were noted, and participant nine dropped out of the study at 6-months follow-up, but the remaining 11 did not fit the criteria for BED at 6- or 12-months follow-up.

Table 3

*The TG Diagnostic Status at Pre- and Post-Treatment, and Across Follow-ups*

<b>Participant</b>	<b>Pre-Treatment</b>	<b>Post-Treatment</b>	<b>3-Months Follow-up</b>	<b>6-Months Follow-up</b>	<b>12-Months Follow-up</b>
1	Sub	None	None	None	None
2	Sub	None	None	None	None
3	Sub	None	None	None	None
4	Sub	Sub	None	None	None
5	Sub	None	Sub	None	None
6	Thres	None	None	None	None
7	Sub	None	None	None	None
8	Thres	None	Thres	Unknown	Unknown
9	Sub	None	Thres	None	None
10	Thres	None	None	None	None
11	Sub	Sub	None	None	None
12	Sub	None	None	None	None

Note: Thres = Threshold BED  
 Sub = Subthreshold BED  
 None = No BED Diagnosis

#### *Eating and General Associated Pathology*

The mean scores for the WL for pre-baseline and pre-treatment, and the mean scores for the TG for pre- and post-treatment are presented in Table 4.

Table 4  
*Mean Scores for WL (pre-baseline and pre-treatment) and TG (pre-treatment and post-treatment)*

SCALE	Wait-List		Treatment Group	
	Pre-Baseline <sup>a</sup>	Pre-Treatment <sup>a</sup>	Pre-treatment <sup>b</sup>	Post-treatment <sup>b</sup>
EDE-Q				
Eating Concerns	3.07	2.31	2.97	0.87
Shape Concerns	4.62	4.37	4.56	1.99
Weight Concerns	3.69	3.47	3.87	1.92
Restraint	3.42	2.25	2.55	1.37
BES	29.64	26.09	28.75	10.25
EES				
Anger	26.55	22.73	23.58	9.92
Anxiety	17.82	18.18	16.92	6.17
Depression	15.73	13.45	13.50	6.67
Total Score	60.09	54.18	54.00	22.75
TAS		52.09	49.58	36.83

<sup>a</sup>  $n = 11$     <sup>b</sup>  $n = 12$

In order to determine whether the TG had changed significantly from pre-treatment to post-treatment relative to the WL, ANCOVAs were computed for each variable. For each ANCOVA, data obtained either pre-treatment (for the TG) or pre-baseline (for the WL) were controlled for by entering the data as the covariate. Effect sizes (partial eta squared) were obtained to determine the magnitude of change, and the size of the effect size was categorised in accordance with Cohen's (1977) suggestions. Nine variables were analysed: the EDE-Q four subscales; the BES; and the EES (three subscales and total score).

The ANCOVAs for all the dependent variables except the Restraint subscale of the EDE-Q showed a statistically significant change for the treatment group relative to the wait-list group. All statistically significant changes were accompanied by large effect sizes. Although the Restraint subscale of the EDE-Q was not statistically significant, it was associated with a medium effect size, indicating that positive change had occurred. F-statistics, degrees of freedom,  $p$ -values, and effect sizes (partial eta squared) are listed in Table 5.

Table 5  
ANCOVA Analyses Results

SCALE	F	p-Value	Effect Size
EDE-Q			
Eating Concerns	15.107	0.001	0.43
Shape Concerns	17.761	<0.001	0.47
Weight Concerns	15.968	0.010	0.44
Restraint	2.0220	0.170	0.09
BES	36.560	<0.001	0.65
EES			
Anger	28.900	<0.001	0.59
Anxiety	18.342	<0.001	0.48
Depression	11.980	0.002	0.38
Total Score	26.195	<0.001	0.57

Note: Degrees of Freedom = (1, 20)  
for all analyses; and the Effect  
Size is partial eta squared.

The mean scores for the TG from pre-treatment, post-treatment, and 3-, 6-, and 12-months follow-up are presented in Figures 1-10.

Figure 1  
*The Mean Scores for the Treatment Group for the Eating Concerns Subscale*

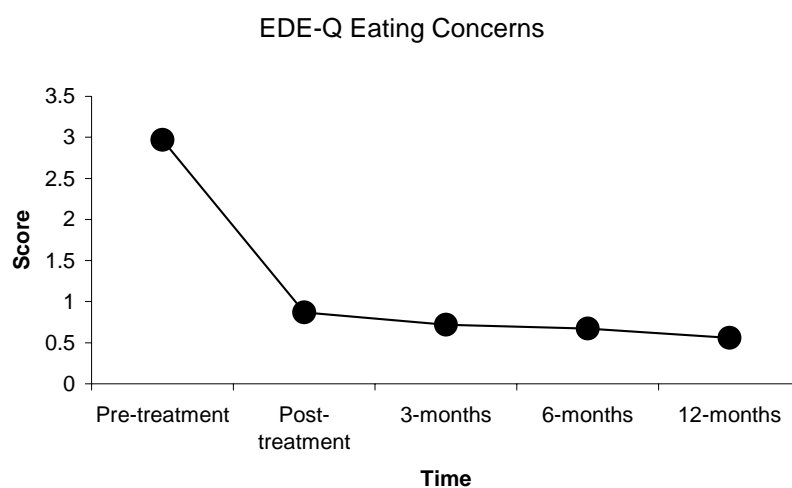


Figure 2

*The Mean Scores for the Treatment Group for the Shape Concerns Subscale*

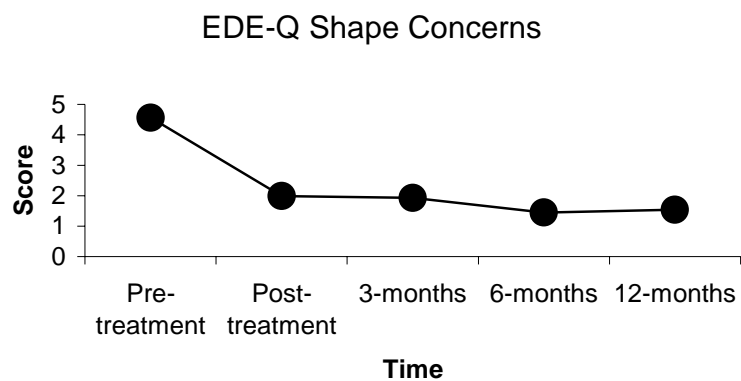


Figure 3

*The Mean Scores for the Treatment Group for the Weight Concerns Subscale*

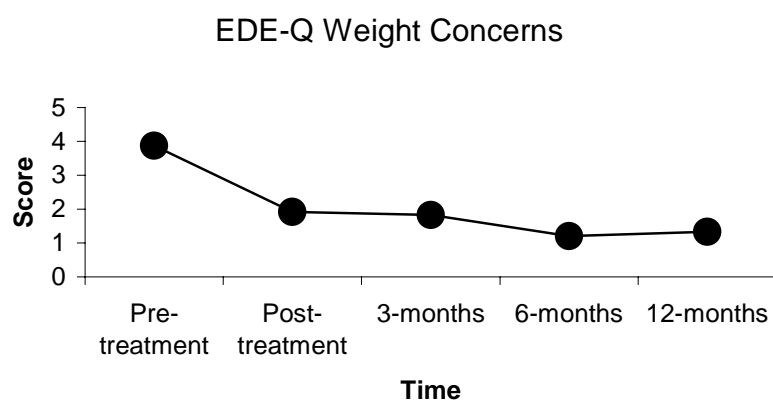


Figure 4

*The Mean Scores for the Treatment Group for the Restraint Subscale*

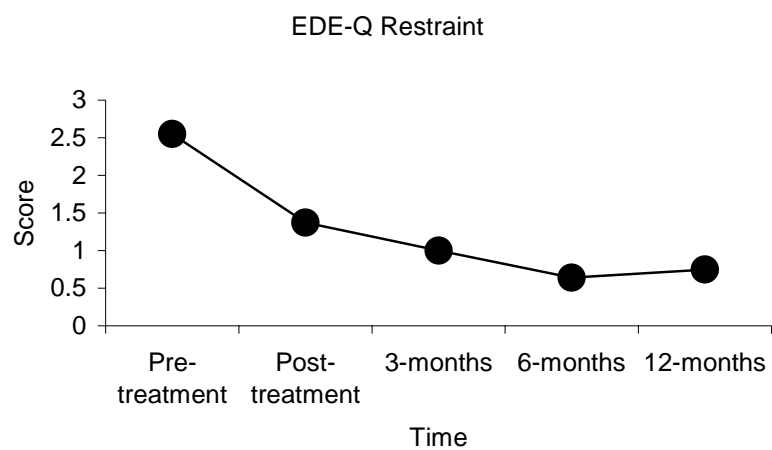


Figure 5

*The Mean Scores for the Treatment Group for the BES*

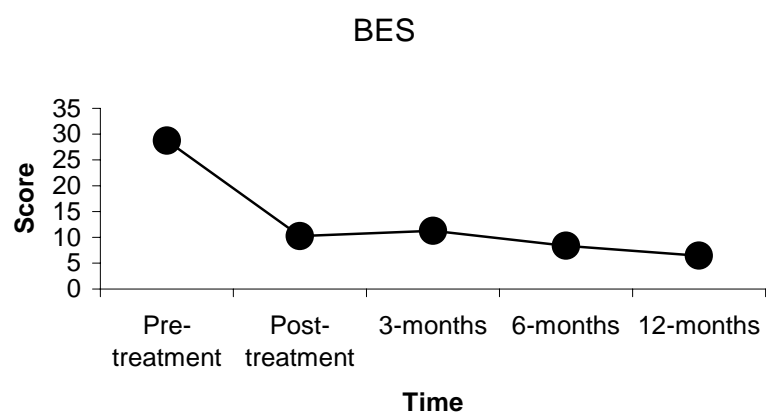


Figure 6

*The Mean Scores for the Treatment Group for the Anger Subscale of the EES*

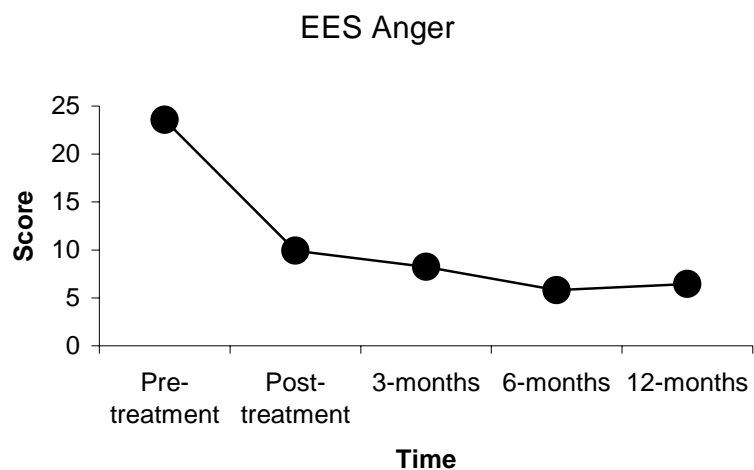


Figure 7

*The Mean Scores for the Treatment Group for the Anxiety Subscale of the EES*

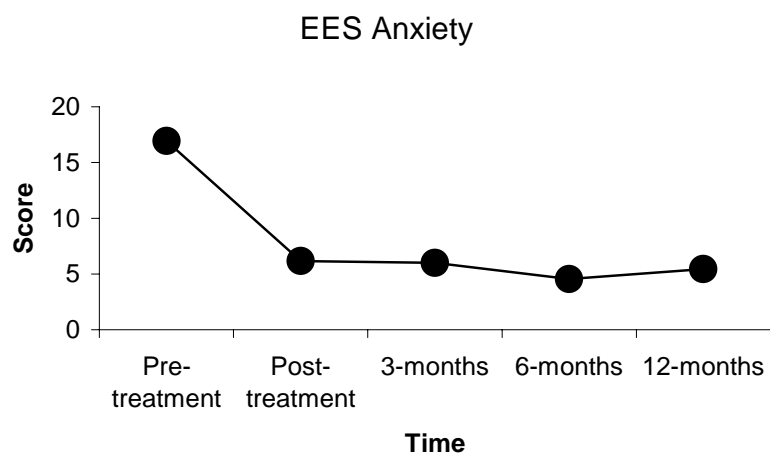


Figure 8

*The Mean Scores for the Treatment Group for the Depression Subscale of the EES*

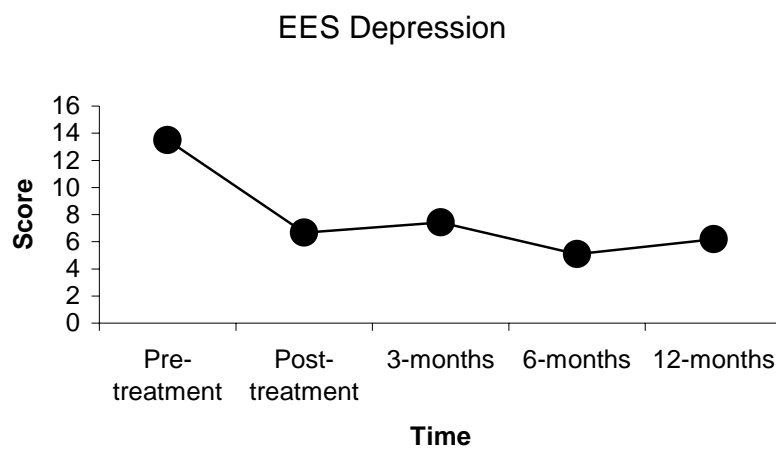


Figure 9

*The Mean Scores for the Treatment Group for the Total Score of the EES*

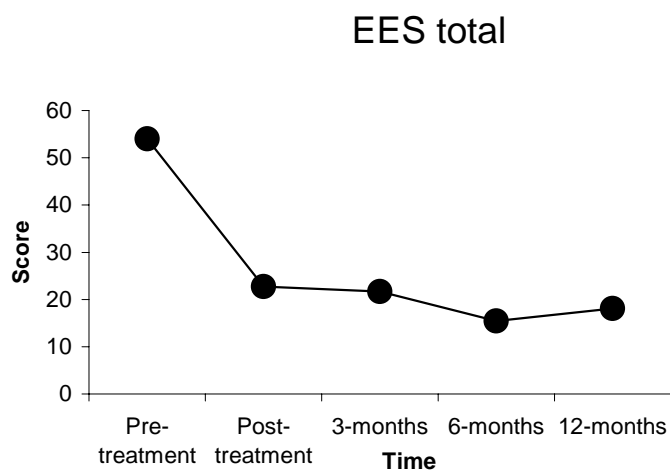
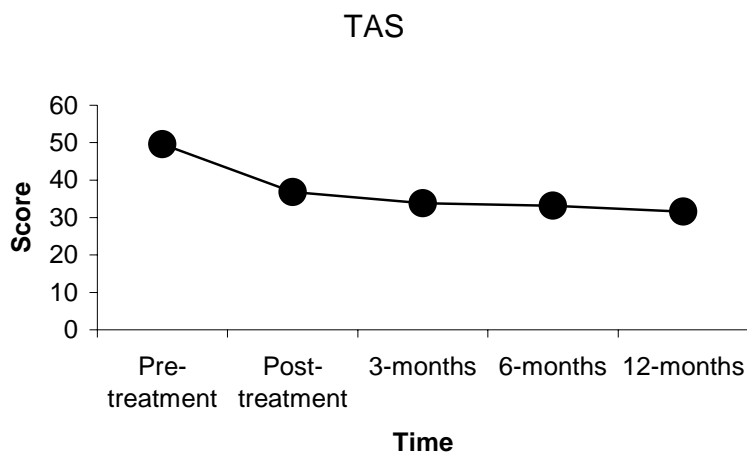


Figure 10  
*The Mean Scores for the Treatment Group for the TAS*



To test whether the treatment effects were maintained from post-treatment to 12-months follow-up, repeated measures univariate tests were conducted for ten variables: the EDE-Q four subscales; the BES; the EES (three subscales and total score), and the TAS. The univariate analyses were run using data from the TG only (referred to as “not combined”), and also using data from the TG and WL combined, and tested for change from post-treatment across 3-, 6- and 12-months follow-up. Effect sizes (partial eta squared) were also obtained, and assessment of the size of the effect size was based on Cohen (1977). The mean scores for the TG and TG and WL combined are presented in Table 6.



Table 6  
*Mean Scores for TG, and WL and TG Combined (post-treatment and 3-, 6-, and 12-months follow-up)*

SCALE	TG				Combined			
	Post-Treatment	3	6	12	Post-Treatment	3	6	12
EDE-Q								
Eating Concerns	0.87	0.72	0.67	0.56	0.73	0.70	0.72	0.54
Shape Concerns	1.99	1.93	1.45	1.54	1.72	1.70	1.60	1.48
Weight Concerns	1.92	1.83	1.20	1.33	0.47	1.44	1.34	1.25
Restraint	1.37	1.00	0.64	0.75	0.88	0.78	0.67	0.69
BES	10.25	11.25	8.36	6.45	7.63	7.03	7.29	6.63
EES								
Anger	9.92	8.25	5.82	6.45	7.62	6.97	7.28	6.40
Anxiety	6.17	6.00	4.55	5.45	6.12	5.81	6.12	5.39
Depression	6.67	7.42	5.09	6.18	7.39	7.04	7.36	6.75
Total Score	22.75	21.67	15.45	18.09	21.13	19.82	20.76	18.54
TAS	36.83	33.83	33.18	31.55	35.77	34.44	34.47	32.91

Note: “3”, “6”, and “12” refer to 3-, 6-, and 12-months follow-up respectively.

The data were first checked for sphericity: where the sphericity assumption was met, sphericity assumed results (normal univariate tests) have been reported; where the sphericity assumption was significant, the sphericity assumed results and Greenhouse-Geisser results have been reported.

Low numbers in the treatment group could have resulted in low power, thus resulting in Type I Error (significant change not being detected from post-treatment across the follow-ups). Thus, the TG data were analysed separately first, and then, to increase the participant numbers and therefore the power of the analyses, in combination with the WL post-treatment and follow-up data.

The results of the univariate analyses are presented in Table 7 and 8. The sphericity assumption was not met for the BES and the Anger subscale of the EES for the TG data only (see Table 7), and for the BES, the Depression subscale of the EES, and the TAS for the TG and WL data combined (see Table 8).

The combined and not combined analyses produced equivalent outcomes for the following variables: all four subscales of the EDE-Q; the BES (which was the same for

both the sphericity assumed and the Greenhouse-Geisser analyses); the Anger and Anxiety subscales of the EES; and the TAS. Of these variables, the Anger subscale of the EES was the only one of these variables to show a significant improvement (which occurred in both the sphericity assumed and in the Greenhouse-Geisser analysis), and this was accompanied by a large effect size. The remaining variables (the EDE-Q subscales, the BES, the Anger and Anxiety subscales of the EES, and the TAS) did not change significantly from post-treatment and across follow-ups.

The combined and not combined analyses produced different outcomes for the Depression subscale and Total score of the EES (see Tables 7 and 8). The Depression subscale produced a significant change with a large effect size with the TG only data, but the change was no longer significant in the combined analysis, and was accompanied with a medium not large effect size. The Total score of the EES was the opposite of the Depression subscale: the not combined analysis did not show significant improvement (although the change was accompanied by a large effect size); but the combined outcome showed a significant improvement with a medium effect size.

Overall, significant changes did not occur for the majority of these variables across follow-up assessments. Where significant change appeared to have occurred, the change was positive, indicating that there was continued improvement.

Table 7

*Post-Treatment and Follow-up Repeated-Measures ANOVAs (TG Only)*

SCALE	Sphericity Assumed			Greenhouse-Geisser			
	F	p-Value	ES	F	df	p-Value	ES
EDE-Q							
Eating Concerns	0.552	0.650	0.052				
Shape Concerns	0.572	0.638	0.054				
Weight Concerns	1.317	0.287	0.116				
Restraint	1.973	0.139	0.165				
BES	1.505	0.233	0.131	1.505	1.673, 16.727	0.249	0.131
EES							
Anger	3.429	0.029	0.255	3.429	1.771, 17.707	0.060	0.255
Anxiety	0.763	0.524	0.071				
Depression	3.429	0.029	0.255				
Total Score	2.658	0.066	0.210				
TAS	2.568	0.073	0.204				

Note: ES = Effect Size (partial eta squared); and df = Degrees of Freedom. For all of the tests of sphericity, the degrees of freedom were 5, and for all of the sphericity assumed tests the degrees of freedom were (3, 30).

Table 8

*Post-Treatment and Follow-up ANOVAs (TG and WL Data Combined)*

SCALE	Sphericity Assumed			Greenhouse-Geisser			
	F	p-Value	ES	F	df	p-Value	ES
EDE-Q							
Eating Concerns	1.882	0.142	0.082				
Shape Concerns	2.154	0.102	0.093				
Weight Concerns	0.884	0.455	0.040				
Restraint	1.886	0.141	0.082				
BES	2.144	0.104	0.093	2.144	2.143, 44.994	0.104	0.082
EES							
Anger	4.433	0.007	0.174				
Anxiety	1.902	0.138	0.083				
Depression	2.516	0.066	0.107	2.516	2.363, 49.623	0.82	0.107
Total Score	3.348	0.025	0.138				
TAS	2.617	0.059	0.111	2.617	2.097, 44.042	0.082	0.111

Note: ES = Effect Size (partial eta squared); and df = Degrees of Freedom. For all of the tests of sphericity, the degrees of freedom were 5, and for all of the sphericity assumed tests the degrees of freedom were (3, 63).

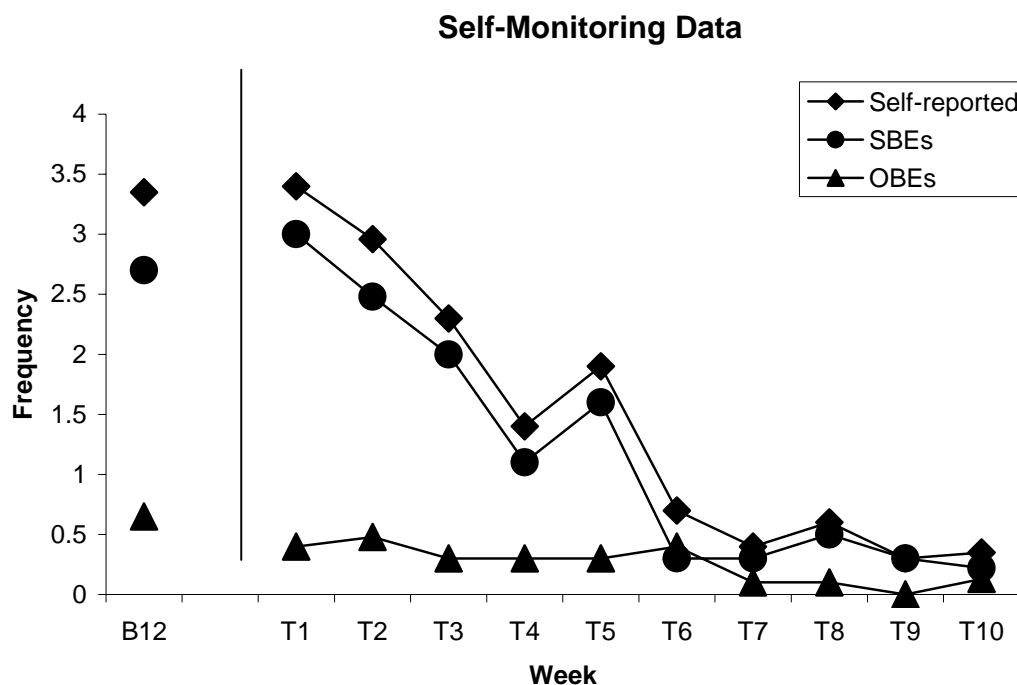
*Self-Monitoring Data Taken From Baseline to Post-Treatment*

Self-monitoring records were reviewed, and analyses were performed. First, binge episodes with a loss of control were categorised as either subjective bulimic episodes (SBEs) or objective bulimic episodes (OBEs). To be classified as an OBE, the episode had to meet criteria outlined by Fairburn and Cooper (1993, p.339-340). To be classified as an SBE, the amount of food consumed in the episode had to fall short of the criteria for an OBE, or be insufficiently described to be categorised as an OBE. Second, self-reported binge episodes were classified as any overeating episode with a loss of control (i.e., the total of SBEs and OBEs).

As few differences existed between the groups, self-monitoring data were combined, and averages per week were calculated. Baseline consisted of 12 weeks, but because all participants had not been recruited until one week before treatment began, only one week of baseline was included. Treatment consisted of 10 weeks.

As can be seen from Figure 11, baseline binge episode frequency was high for both the self-reported binge episodes and SBEs. Baseline binge eating for OBEs was relatively low. Binge eating reduced significantly at post-treatment in all three conditions, reaching close to zero for both SBEs and OBEs, and self-reported episodes reduced from an average of 2.3 at baseline to 0.4.

Figure 11  
*Self-Monitoring Data from Baseline to Post-Treatment*



Note: B12 = Baseline Week Twelve  
 T1-T10 = Treatment Weeks One to Ten

### *Abstinence Rates*

Binge abstinence was defined as complete absence of bingeing, including SBEs and OBEs, in the previous four weeks, and was measured using the EDE interview records. In order to be conservative in calculating binge abstinence rates, they were calculated assuming that the participant who dropped out was still bingeing at 6- and 12-months follow-up. A total of 78% (18 participants out of 23) reached binge abstinence by post-treatment. Binge abstinence had improved from post-treatment to 3-months follow-up and 83% (19 of 23) were abstinent. Subsequent assessments revealed more improvements, and a rate of 91% abstinence rate (20 of 22) was documented at 6- and 12-months follow-up. As one participant had dropped out after 3-months follow-up, and because she had reported a recurrence of binge eating at 3-months follow-up, an intent-to-treat analysis was performed that assumed this participant was still bingeing at 6- and

12-months follow-up. As such, an abstinence rate of 87% (20 of 23) was found at 6- and 12-months follow-up.

## Part II - Subthreshold and Threshold BED Scores Compared

### *Diagnostic Status, Eating and General Associated Pathology*

*BMI.* Partial eta squared effect sizes were all small, and showed that there were virtually no differences in BMI between subthreshold and threshold BED BMI at pre-treatment, post-treatment, or at any of the follow-ups (see Table 9).

Table 9

*BMI: Means and Effect Sizes for Subthreshold and Threshold BED*

	Subthreshold	Threshold	
	Mean	Mean	Effect Size
Pre-Treatment	28.18	28.13	<0.001
Post-Treatment	28.54	28.15	0.001
3-Months Follow-up	28.04	28.15	<0.001
6-Months Follow-up	28.15	28.37	<0.001
12-Months Follow-up	28.24	28.13	<0.001

Note: Effect size is partial eta squared.

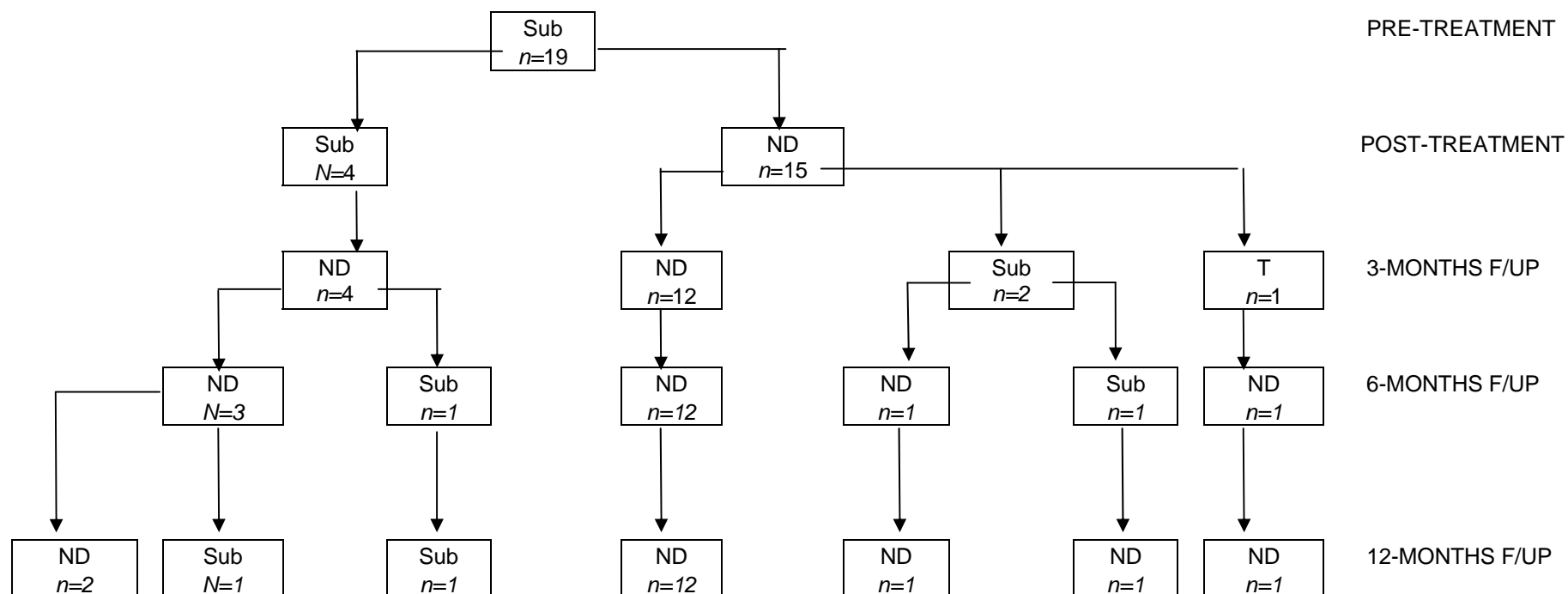
*Diagnostic Status.* As can be seen on Figure 12, at pre-treatment, 19 women (83%) met the criteria for subthreshold BED (see Figure 12). By post-treatment, 79% (15) of these did not meet the criteria for an eating disorder, while 21% (4) continued to meet the criteria for subthreshold BED. At 12-months follow-up, 89% (17) of the women meeting the criteria for subthreshold BED at pre-treatment did not meet the criteria for an eating disorder, while 11% (2) met the criteria for subthreshold BED.

Figure 13 shows that at pre-treatment, four women (17%) met the criteria for threshold BED. By post-treatment, 75% (3) of these did not meet the criteria for an eating disorder, while 25% (1) met the criteria for subthreshold BED, and none met the criteria for threshold BED. Of those meeting the criteria for threshold BED at pre-treatment, 75%

(3) did not meet the criteria for an eating disorder at 12-months follow-up, and the BED status of 25% (1) was unknown.

Figure 12

*Diagnostic Status Changes for Those Who Began the Treatment Diagnosed with Subthreshold BED*

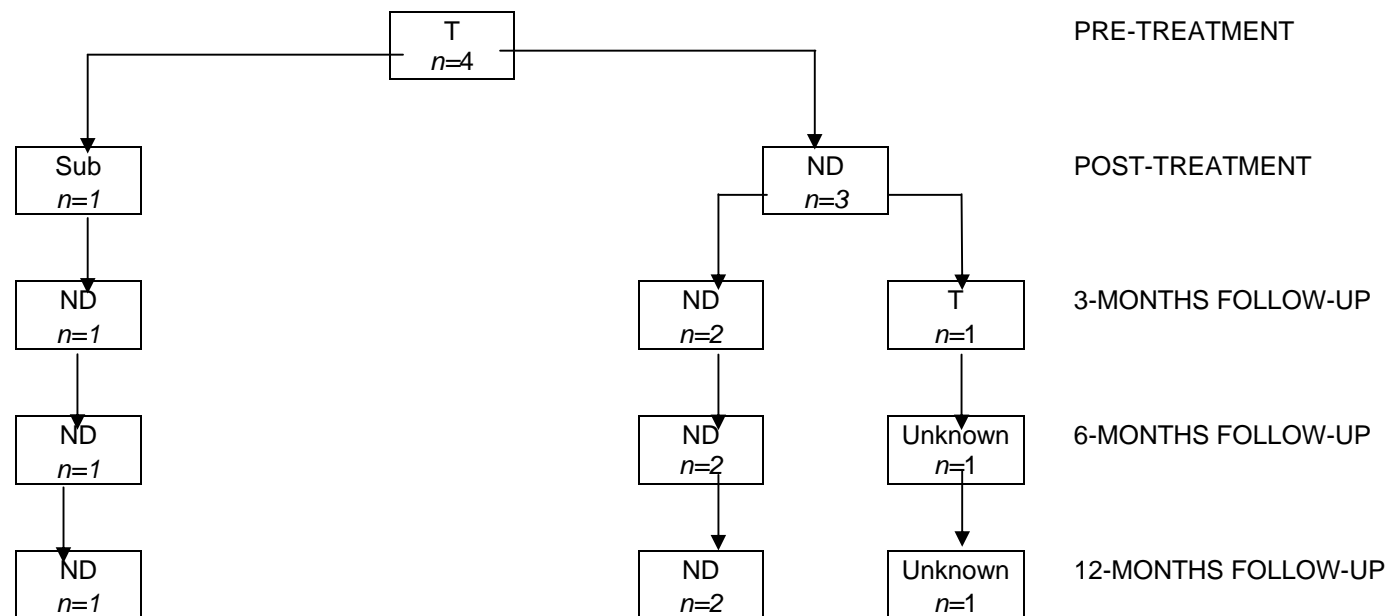


Note: F/UP = Follow-up  
 Sub = Subthreshold BED  
 T = Threshold BED  
 ND = No diagnosis



Figure 13

*Diagnostic Status Changes for Those Who Began the Treatment Diagnosed with Threshold BED*



Note: Sub = Subthreshold BED

T = Threshold BED

ND = No diagnosis

*Eating and General Associated Pathology.* Severity of eating and related pathological symptoms of subthreshold and threshold BED were compared at pre-treatment to test whether diagnostic status determined the severity of the related symptoms, at post-treatment to test whether there was a difference in response to treatment between the groups, and at 3-, 6-, and 12-months follow-up to determine whether there were any differences in the maintenance of treatment effects. Comparisons were performed using partial eta squared effect sizes (see Table 10 for means of the subthreshold and the threshold BED participants, and the effect sizes at each time point).

Table 10  
*Means and Effect Sizes of Subthreshold and Threshold BED: Comparing Time Points*

Time Point	Variable	Subthreshold BED Mean	Threshold BED Mean	ES
Pre-Treatment	EDE-Q			
	Eating Concerns	2.63	2.75	0.001
	Shape Concerns	4.68	3.47	0.091
	Weight Concerns	3.81	3.05	0.053
	Restraint	2.31	2.90	0.030
	BES	28.11	24.50	0.034
	EES			
	Anger Subscale	24.37	17.50	0.034
	Anxiety Subscale	17.89	15.75	0.012
	Depression Subscale	13.79	12.00	0.028
	Total Score	55.95	45.25	0.098
	TAS	51.53	47.25	0.017
Post-Treatment	EDE-Q			
	Eating Concerns	1.00	0.95	0.001
	Shape Concerns	2.51	1.52	0.108
	Weight Concerns	2.18	1.70	0.033
	Restraint	1.84	0.80	0.081
	BES	11.36	13.25	0.011
	EES			
	Anger Subscale	13.53	8.50	0.066
	Anxiety Subscale	8.42	5.75	0.040
	Depression Subscale	7.79	5.75	0.029
	Total Score	29.74	20.00	0.040
	TAS	41.11	37.50	0.021

Table 10 Continued...

*Means and Effect Sizes of Subthreshold and Threshold BED: Comparing Time Points*

## 3-Months Follow-up

EDE-Q			
Eating Concerns	0.64	0.50	0.021
Shape Concerns	1.79	1.53	0.008
Weight Concerns	1.84	1.80	<0.001
Restraint	1.41	0.40	0.103
BES	10.32	8.25	0.011
EES			
Anger Subscale	9.32	11.00	0.008
Anxiety Subscale	5.89	8.75	0.031
Depression Subscale	7.11	5.00	0.051
Total Score	22.00	24.75	0.005
TAS	36.26	40.51	0.036

## 6-Months Follow-up

EDE-Q			
Eating Concerns	0.68	0.33	0.026
Shape Concerns	1.86	0.70	0.067
Weight Concerns	1.79	1.33	0.012
Restraint	1.15	1.00	0.002
BES	10.16	4.67	0.101
EES			
Anger Subscale	10.05	2.00	0.112
Anxiety Subscale	5.95	3.00	0.041
Depression Subscale	6.16	4.00	0.036
Total Score	22.16	9.00	0.077
TAS	38.84	33.67	0.024

## 12-Months Follow-up

EDE-Q			
Eating Concerns	0.72	0.93	0.004
Shape Concerns	1.74	2.17	0.016
Weight Concerns	1.41	2.80	0.178
Restraint	1.16	1.07	0.001
BES	8.11	8.67	0.001
EES			
Anger Subscale	9.56	9.33	<0.001
Anxiety Subscale	7.47	2.33	0.108
Depression Subscale	8.00	6.67	0.009
Total Score	26.05	9.33	0.116
TAS	36.89	38.33	0.002

The results showed that the effect sizes (partial eta squared) between the groups at any time point could be categorised as small using Cohen's (1977) methods.

At pre-treatment the Shape Concerns subscales of the EDE-Q and Depression subscale of the EES were accompanied by medium effect sizes, and means were higher in the subthreshold group.

At post-treatment, the Shape Concerns subscale of the EDE-Q was accompanied by a large effect size, and the Restraint subscale of the EDE-Q and the Anger subscale of the EES were accompanied by medium effect sizes. These three variables all evidenced higher means in the subthreshold group.

In the follow-up assessments, except for the Weight Concerns subscale of the EDE-Q at 12-months follow-up, the means for all effect sizes indicating a large or medium difference between the groups at each assessment were higher for the subthreshold group. The Weight Concerns subscale showed a large difference between the groups at 12-months follow-up, with the threshold group evidencing a higher mean than the subthreshold group.

To determine whether the subthreshold BED group responded well to the treatment, repeated measures ANOVAs tests were computed comparing pre- to post-treatment for ten variables: the EDE-Q four subscales; the BES; the EES (three subscales and total score), and the TAS. The univariate analyses were computed using data from the subthreshold participants only. Effect sizes (partial eta squared) were also obtained, and assessment of the size of the effect size was based on Cohen (1977). The mean scores for the subthreshold participants are presented in Table 10.

The data were first checked for sphericity, and the sphericity assumption was not violated for any of the variables. The results of the univariate tests for the subthreshold group are presented in Table 11.

Table 11  
*Univariate Test Results Comparing Pre- to Post-Treatment: Subthreshold BED Only*

SCALE	F	p-Value	Effect Size
EDE-Q			
Eating Concerns	29.540	<0.001	0.621
Shape Concerns	45.490	<0.001	0.716
Weight Concerns	27.471	<0.001	0.604
Restraint	1.747	0.203	0.088
BES	64.780	<0.001	0.783
EES			
Anger	40.834	<0.001	0.693
Anxiety	28.774	<0.001	0.615
Depression	23.860	<0.001	0.570
Total Score	53.726	<0.001	0.749
TAS	11.259	0.004	0.385

Note: The Effect Size is partial eta squared. The degrees of freedom were (1, 18) for all analyses.

The results showed that the subthreshold group made statistically significant improvements on all the dependent variables except for the Restraint subscale of the EDE-Q. All positive changes were accompanied by large effect sizes, indicating that the subthreshold group responded well to treatment. Although the Restraint subscale was not significantly difference from pre- to post-treatment for the subthreshold group, the change was positive and was accompanied by a medium effect size.

## Discussion

The aim of the current study was to determine whether teaching emotional discrimination and management skills to women with threshold and subthreshold BED is efficacious in treating binge eating and related symptoms. This study was a controlled investigation that replicates and extends a previous study (Clyne & Blampied, 2004). Whereas the previous study assessed participants' binge eating using the QEWP and BES, this study used a structured clinical interview for diagnosing subthreshold and threshold BED. In addition, whereas the previous investigation included only 11 participants and did not include a control group, the present study treated 12 women in a treatment group, and included a control group with 11 women. Finally, whereas the

Clyne and Blampied study included a 3-month follow-up, the current study assessed participants up to one year after treatment ended.

Overall, the results indicated that the treatment was successful and produced large improvements in almost all of the measured eating and related pathology in women with subthreshold or threshold BED. The results also indicated that treatment gains were well-maintained up to one year after treatment ended, with some variables illustrating continued improvement across follow-up assessments. Taken together, the pre- and post-treatment and follow-up outcomes of this study indicate that teaching emotional discrimination and management skills to those with BED can be effective in producing large and maintained improvements in binge eating and related symptoms. The outcome also provides additional evidence that PET may be an effective intervention modality for treating BED.

From pre- to post-treatment, statistically significant improvements with large effect sizes were observed in measures of binge eating and eating concern, shape and weight concerns, emotional eating, and alexithymia. Eating restraint did not change statistically significantly from pre- to post-treatment, but the improvement that did occur was accompanied with a medium effect size.

Comparisons between post-treatment and follow-up assessments showed that minimal or no changes had occurred in concerns over-eating and shape. Concerns regarding weight, eating restraint, binge eating, emotional eating and alexithymia improved with medium to large effect sizes, illustrating that further improvements had occurred after treatment ended up to one-year follow-up. The Anger subscale of the EES was the only variable that evidenced a statistically significant improvement, and this was accompanied by a large effect size. Mixed results were found for the Depression subscale and Total score of the EES across follow-up assessments from post-treatment. Whereas a significant improvement with a large effect size was found for the Depression subscale using the TG only data, using the TG and WL data combined evidenced a non-significant improvement with a medium effect size. Thus, adding the WL to the TG data appears to have reduced the amount of improvement that occurred from post-treatment across follow-ups for the subscale. The Total score of the EES showed a non-significant improvement with a large effect size from post-treatment across follow-ups, but a

statistically significant improvement with a medium effect size when the TG and WL data were combined. Thus, the WL data seem to have ameliorated the improvement observed with the TG data only in the variable.

Interestingly, mean scores of the EDE-Q Restraint subscale did not reduce significantly from pre- to post-treatment, although the improvement that did occur was accompanied by a medium effect size. It is possible that individual differences in subjective labelling of dietary restraint is the reason for this finding. During the EDE interviews at baseline and pre-treatment, some women reported total lack of dietary restraint, while others reported extreme dietary restraint associated with few meals and snacks during the day. The heterogeneous nature of restraint in BED has been noted in the past (e.g., Westernhoefer et al., 1999). From this study, it appears that there may be a continuum of eating habits in binge eaters that ranges from no restriction (characterised by high levels of chaotic eating), to flexible restriction (characterised by normative eating patterns), to rigid restriction (characterised by rigid, inflexible rules). Whereas flexible restriction could be protective against binge eating (Westernhoefer et al., 1999), rigid restriction (e.g., Timko & Perone, 2005; Westernhoefer, et al., 1999), and total lack of restriction, may increase the likelihood of bingeing. In their study of binge eating in the natural environment, Stice and colleagues (2000) documented an association between dieting and binge eating that was moderated by negative affect. Thus, dieting behaviour was temporarily disinhibited in the presence of negative affect, thereby putting the individual at risk of binge eating. Precipitating negative affect could play a significant role in binge eating in those who are not dieting. In the presence of negative affect, those who either do not restrict food intake, or who are normative eaters and use flexible restriction, may still be at risk of binge eating. While it provided evidence for an interaction effect between dieting, negative affect and binge eating, the Stice and colleagues study (2000) did not examine the association between total lack of restriction or flexible restriction and binge eating. Further, participants with BED diagnoses were not included. Future research is warranted to test whether total lack of restriction is a risk factor for binge eating in BED in the presence of negative affect, and secondly to test whether flexible restriction is a protective factor against binge eating in BED, except in the presence of negative affect.

Another explanation for the lack of change in restraint may be due to the validity of the EDE-Q Restraint subscale to measure dietary restraint, particularly in the short term. In a four study investigation, Stice and colleagues tested the validity of several commonly used instruments in detecting short-term dietary restriction (Stice, Fisher & Lowe, 2004). They tested normal weight and overweight individuals, and those with and without eating disorders, and examined them under different conditions (using tempting and healthy food in laboratory and naturalistic settings). In all four studies, and with all but one of the measures they tested, Stice and associates found no significant correlations between the self-reports on the measures they used, including the Restraint subscale of the EDE-Q, and actual caloric intake. Thus, it is possible that no change was observed in the Restraint subscale of the EDE-Q from pre- to post-treatment or across follow-ups as it was not a valid measure of dietary restraint.

Using an intent-to-treat analysis, very few changes to the outcome using treatment completers' data was observed. A significant change from pre- to post-treatment was still found, and no other significant differences were found when noncompleters' scores were added to the analyses. This indicates that the outcome was not biased by factors unique to those who did not complete the treatment or the study.

Collectively, the results of the current investigation provide some level of support for the Affect Regulation Model of BED, which posits that binge eating is precipitated by negative affect and an inability to cope effectively with emotional upset. In this study, a reduction in binge eating was associated with a reduction in scores on measures of emotional eating. Further, although no official evaluation was taken of the binge antecedents recorded in the self-monitoring, anecdotal evidence showed that negative affect was frequently cited as occurring before binge episodes. Emotions such as sadness, boredom, frustration, anxiousness, and feeling upset were commonly recorded as preceding binge eating.

As evidenced by the self-monitoring records from baseline to post-treatment, a clear reduction in binge frequency occurred in self-reported binge episodes, SBEs and OBEs. Unfortunately, binge episodes were not always described sufficiently to be easily categorised as either an SBE or OBE. Those that were not described well were categorised as an SBE in order to be conservative in estimating the effects of the



treatment, thus it is possible that the actual rate of OBEs was higher than was reported. Further, participants were recruited up to one week before treatment began in the treatment group. Despite having obtained baseline self-monitoring records from up to twelve weeks before the treatment group started the intervention, these records could not be used as almost weekly a new participant was recruited which would have changed the weekly bingeing average. Thus, records taken from baseline weeks that did not contain all intended participants could not be accurately compared to treatment records, and in the end only one week of baseline could be used. Future studies should ensure that all participants have been recruited for at least two weeks prior to treatment starting so that baseline bingeing can be more accurately determined.

Abstinence was defined as absence of SBEs or OBEs within the previous four weeks. By the end of treatment, 78% of the women were abstinent from bingeing (as measured by self-monitoring records), a rate that was better than or comparable to those studies that report abstinence as a result of CBT (e.g., Agras et al., 1995; 1997; Peterson et al., 2001; Telch et al., 1990), IPT (Wilfley et al., 2002), or DBT for BED (e.g., Telch et al., 2000). Notably, whereas DBT can take up to six months to effectively treat BED, the treatment used in the current study takes 12 weeks. This implies that treatments shorter than the current form of DBT can effectively address emotional discrimination and regulation deficits in those with BED. An intent-to-treat analysis showed that by one-year follow-up, 87% were abstinent from bingeing (as measured by EDE records), a rate which was better than post-treatment. As other studies have reported a reduction in abstinence rates after 3- to 12-months post-treatment after CBT (e.g., Agras et al., 1997; Grilo et al., 2005; Telch et al., 1990), IPT (Wilfley et al., 2002), and after DBT (e.g., Telch et al., 2000), this continued improvement can be considered a positive result. Nevertheless, the results must be taken with due consideration to the fact that the majority of participants were subthreshold BED in the current study, and may not be directly comparable to previous studies who have treated participants with threshold BED only (e.g., Agras et al., 1997; Telch et al., 2000; Wilfley et al., 2002).

At pre-treatment all women were subthreshold or threshold BED, at post-treatment 74% could no longer be diagnosed with an eating disorder, 26% were subthreshold BED, and none were threshold BED. Data from those who were available

for the one year assessment showed that 91% of the treatment completers could no longer be diagnosed with an eating disorder, and 9% were subthreshold BED. These results suggest that the women continued to improve over the year after treatment ended.

Analyses showed that there was no change in average BMI from pre- to post-treatment or across follow-up assessments. Weight data were self-reported, and although research has shown that self-reported weight is highly correlated with actual weight (e.g., Attie & Brooks-Gunn, 1989) it is possible that the data were systematically biased. This indicates that the current treatment should be supplemented with interventions that directly target weight loss, in the cases where weight loss would be beneficial. Future research, particularly that trying to establish whether the treatment results in a reduction in BMI, should directly measure weight and height.

Although the results are very encouraging, several limitations impede definitive conclusions from being made. Firstly, there was a high level of participant attrition in the WL (12 of 17 participants, 71%), which may have been related to self-monitoring for a long period of time. Many of the women who were re-contacted after three months of baseline self-monitoring stated that they stopped keeping records after the first few weeks, and had subsequently decided they no longer wanted to participate. It is also possible that the women in the WL no longer felt committed to treatment after such a long wait. Perhaps only a small window of opportunity exists for treating some women, and motivation may be at its peak on first contact with treatment providers, but may wane over time.

As there was such a high incidence of women leaving the WL, more women were recruited and assigned to the group so that the TG and WL were of similar numbers. Thus, this study is limited by the fact that the participants were not randomly assigned, and that only one week of baseline self-monitoring could be compared to binge rates during treatment.

One woman refused further contact after 3-months follow-up. Despite improving from threshold BED at pre-treatment to not fitting the criteria for an eating disorder at post-treatment, the participant deteriorated back to threshold BED at 3-months follow-up. It is possible that she discontinued her participation in the study due to this decline in improvements, which she reported that she attributed to considerable personal stress

during that period. As no data were available for her, it was suspected that the mean scores of some or all of the dependent variables from the remaining participants might have been artificially lowered at 6- and 12-months follow-up. As such, additional analyses were performed that incorporated her last collected data from 3-months follow-up. Even when she was assigned scores equal to her 3-month data at 6- and 12-month analyses, the outcome was the same, strengthening the conclusion that the treatment effects were well maintained up to one year later.

As only one Masters-level investigator with very little training in treatment administration carried out the treatment programme, it is possible that the outcome could differ with the use of different therapists. Furthermore, faithfulness to treatment was not assessed, and some participants needed to catch up sessions with the author individually, thereby deviating from a strictly group format. A replication using the treatment programme employed in this study with more than one therapist, who are trained in the treatment of eating disorders, and using a formal assessment to treatment faithfulness, is needed to determine the utility of the intervention. Further, in future studies the data from participants who miss sessions with the group that they were assigned to should not be included in the treatment outcome analysis.

It is also worth noting that all diagnoses were established by the author, which may have resulted in a bias towards finding a diagnosis prior to treatment, and finding no diagnosis following treatment. Future studies on the efficacy of the treatment programme used in this study should use independent assessors to establish the diagnostic status of the participants to reduce the likelihood of unreliable diagnoses. Further, they should check for diagnostic reliability among the assessors, to check that the diagnoses are accurate.

Lastly, as this was a group-based treatment investigation, the analyses may have violated one of the assumptions of statistical testing: that the observations should be independent. Group-based interventions have the benefit of shared experiences between participants, but a likely outcome of this is that participants will influence each other's response to treatment, resulting in non-independence of observations. Baldwin and colleagues noted that non-independence of observations could lead to an increase in type

I error (Baldwin, Murray, & Shadish, 2005). It is possible that the outcome of the current study was influenced by this effect.

The second aim of the investigation was to compare subthreshold and threshold BED on several measures and at different times: before treatment, to test whether diagnostic status determined the severity of the related symptoms; post-treatment to compare response to treatment; and across follow-ups to establish whether there was a difference between the groups in maintenance of treatment effects. Previous research has found that binge eating and related symptoms are similarly severe in subthreshold and threshold BED, and that those diagnosed with either type of BED differ only in respect to diagnosis (e.g., Crow et al., 2002; Martin et al., 2000). It was thought that the results of the investigation would support the findings of previous research.

In the current study, those with threshold BED reported two or more OBEs per week for the last six months, those with subthreshold BED reported a binge frequency that was less than two per week but more than once in the past 28 days, and/or a binge size that was categorised as an SBE, as assessed using the diagnostic portions of the EDE interview (Fairburn & Cooper, 1993). Both groups fitted the remaining diagnostic criteria for BED.

Using effect sizes to examine how close or discrepant the groups were, the results showed very few differences between the groups on measures of eating and general pathology, indicating that the groups differed mainly with respect to diagnostic status. Therefore, the data from the two groups suggest that the subthreshold and threshold BED groups were equally affected by pathological eating and associated general distress, thus supporting the findings of previous research (e.g., Crow et al., 2002; Martin et al., 2000; Striegel-Moore et al., 1998). Also using effect sizes to compare post-treatment scores for subthreshold and threshold BED, the results revealed that subthreshold and threshold BED did not differ in response to treatment. Effect sizes also showed that the differences between the groups across follow-up assessments were minimal, indicating that treatment gains were generally equivalent for both groups. Where the effect sizes were medium or large, the means were almost always higher in the subthreshold than the threshold group. The only exception to this was the Weight Concerns subscale of the EDE-Q, which showed a large difference between the groups, and a higher mean in the threshold group.

To test whether the subthreshold group responded to well to treatment independent of threshold data, an ANOVA was run using subthreshold data only. The results were statistically significant for all the variables with a large effect size, except eating restraint. The pre- and post-treatment means of the Restraint subscale of the EDE-Q evidenced a statistically non-significant positive change with a medium effect size. This shows that, despite not fitting the diagnostic criteria for threshold BED, those with subthreshold BED may benefit from treatment.

The similar severity in eating and general pathology between the subthreshold and threshold groups at pre-treatment, the match in response to treatment for the groups, and the noteworthy response to treatment in the subthreshold group, may suggest that current diagnostic criteria are too stringent, and calls into question the current practice of relying on binge size and frequency to diagnose BED. During the post-treatment EDE interviews, some of the women claimed they were no longer plagued by food and their previous symptoms of eating pathology despite not changing their eating habits. Thus, while they may have continued to overeat occasionally, they were no longer overly concerned about this because they did not feel their eating was out of control. This suggests that the perception of loss of control is a key factor in diagnosing BED. This finding is consistent with other research that has found loss of control as a salient criterion for defining binge eating (e.g., Telch et al., 1998).

However, conclusions from this study are impeded by the limitations mentioned above, and by the fact that there was such a small sample in the threshold group that statistical significance testing could not be performed in most of the analyses, forcing reliance on informal evaluation of effect sizes to examine differences between groups. Future research should focus on comparing subthreshold and threshold groups at pre-treatment, and their response to treatment, to determine how effectively the diagnostic criteria differentiate between those who have BED and those who do not.

In sum, results from the current study suggested that the treatment programme devised for treating BED by teaching emotion recognition and regulation was associated with a high rate of binge abstinence, and also considerable improvements in eating and related pathology. The outcome also showed that these improvements were either well-maintained, or that they were followed by further improvements up to one year later. As

data were included from those who did not complete the treatment or the study, the generalisability of the results does not seem to be threatened by participant self-selection (Flick, 1988). Anecdotal evidence indicated that binge episodes before treatment were frequently precipitated by negative affect. Further, the reduction in binge eating from pre- to post-intervention was associated with a reduction in binge eating. These outcomes provide some support for the Affect Regulation Model of BED.

In addition to beginning the treatment with similar levels of eating and related pathology, those with subthreshold and threshold BED seem to have responded similarly to the intervention. Further, the results indicated that both groups maintained treatment gains similarly across follow-up assessments.

However, several limitations, including possible diagnostic and treatment faithfulness issues, impede the reliability and validity of the outcome of this study. Also, because the number of participants was too low in the threshold group to allow for statistical analyses to be performed, informal examination of effect sizes had to be used instead. To determine the usefulness of the current treatment programme for the successful treatment of subthreshold and threshold BED, the study must be replicated using more stringent methodological practices, and using greater numbers of participants. A replication using participants from clinical populations would also go towards determining how well those with possibly more severe symptoms respond to the treatment used in this study.

## **CHAPTER FIVE:**

### **Study Two;**

#### *Analysis of Treatment*

Using an intervention that combined aspects from CBT, IPT, DBT, and components unique to the treatment programme, improvements in binge eating and related eating pathology were found in Study One. With a focus on teaching emotional recognition and management skills to those diagnosed with either subthreshold or threshold BED, a binge abstinence rate of 78%, and an abstinence rate of 91% at one-year follow-up, were found. Significant reductions were observed in pathological eating, emotional eating, alexithymia, and shape and weight concerns. Emotional eating in response to depression may have continued to improve after treatment ended and across follow-ups, although the changes were associated with small effect sizes. All other variables were not found to have changed from post-treatment and across follow-ups, indicating that treatment gains were well-maintained.

Treatment endorsement by consumers can be a crucial element in the development of a therapeutic relationship, in satisfaction with the treatment, and, subsequently, with the treatment effect (Hoencamp, 1999). The first aim of Study Two was to determine how satisfied the participants were with the treatment package. Participants' responses to the intervention were measured to assess consumer satisfaction and to evaluate the perceived quality of the treatment.

Whereas some studies have evaluated the separate contributions of behavioural and cognitive components of CBT for BN (e.g., Fairburn et al., 1991; Freeman, Barry, Dunkeld-Turnbull et al., 1988; Wilson, Rossiter, Kleifield et al., 1986; Wolf & Crowther, 1992), mechanisms of change of treatments for BED are unknown (Wilson, 2005). The second aim of the current study was to evaluate whether the positive results observed in Study One resulted from the treatment as a whole, or from specific components of the intervention. Assessments were made after the end of each conceptually distinct component. Trends were evaluated for linearity, where it was assumed that nonlinear change would occur if the change was due to specific treatment components, and linear change would occur if the change was due to the treatment as a whole.

## Method

### *Procedure*

In the first part of Study Two, consumer satisfaction and perceived effectiveness of the treatment was measured. After the intervention, a Programme Evaluation Questionnaire (PEQ) was administered (see Appendix 4) to assess participants' responses to treatment. All twenty-three women from Study One participated in this part of Study Two.

In the second part of Study Two a session-by-session analysis of change was undertaken. Participants from Study One were invited to take part in this assessment, and of the 23 women asked, nine volunteered to participate.

Participants were given questionnaires at six assessment intervals: before treatment, and after sessions two, four, six, seven, and nine. Each assessment interval marked the end of a treatment concept. Session one to the end of two included information on self-monitoring, recognising a binge episode, and basic nutrition. Session three to the end of session four included understanding the influence of emotions on life generally, and binge episodes more specifically, and recognising specific emotions through both physiological and psychological cues. Session five to the end of session six taught relaxation techniques. Session seven taught problem solving, and session eight to the end of session nine taught assertion training.

### *Measurements*

One measure was used for the first part of Study Two; the Programme Evaluation Questionnaire. Five measures were used for the session-by-session analysis: the EDE-Q (Fairburn & Beglin, 1994), the EES (Arnow et al., 1995), the TAS (Parker et al., 1993), the DASS (Lovibond & Lovibond, 1995), and the PSS (Cohen et al., 1983; Johnston et al., 1995). For psychometric properties of the EDE-Q, EES and TAS, see the Method section of Study One.



*The Programme Evaluation Questionnaire.* The PEQ (see Appendix 4) is a measure that includes three items presented on a 7-point Likert scale, from 1 (“not very much”) to 7 (“very much”). As closed questioning can result in a positive bias (Nguyen, Attkisson, & Stegner, 1983), nine additional open-ended questions, pertaining to enjoyment, usefulness and effectiveness of the treatment programme, were included.

*The Depression-Anxiety-Stress Scale (DASS; Lovibond & Lovibond, 1995).* BED has been shown to often present with psychiatric comorbidity, particularly depression and anxiety (e.g., Spitzer et al., 1994; Wilfley et al., 2000). The DASS is comprised of 42 negative affect symptoms that may have been experienced in the previous week. Items are presented on a 4-point severity/frequency scale, and are scored from 0-3. Scores from the DASS demonstrate high internal consistency, and convergent validity (scores from the DASS correlate highly with the Beck Depression and Beck Anxiety Inventories (Lovibond & Lovibond, 1995)). Scores from the DASS have been shown to be more successful at reliably discriminating between the three negative affective states than the Beck inventories (Lovibond & Lovibond, 1995).

*The Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; Johnston, Wright, & Weinman, 1995).* BED is frequently associated with emotional distress (e.g., Arnow et al., 1992; Deaver et al., 2003; Stice et al., 2001), and it follows that such distress may have come about due to life stress. The PSS was used to measure perceived stress, defined as the “degree to which situations in one’s life are appraised as stressful” (Cohen et al., 1983; Johnston et al., 1995, p.23). Stress is measured using a 14-item scale, a 10-item scale, or a 4-item scale that is suitable for phone interviews. Items are scored from 0-4, from “never” to “very often”.

This study used the PSS-14 to assess participants’ perceived stress. Scores from the PSS-14 have been shown to have good internal consistency, good test-retest reliability, and concurrent validity from the data of the PSS has been demonstrated (Cohen et al., 1993; Johnston et al., 1995). The scale appears to better predict future physical symptomatology than life event measures (Johnston et al., 1995).

### *Statistical Analyses*

The PEQ was evaluated using descriptive statistics, and by summarising the comments made by the participants in the open-ended questions.

To determine whether the changes that occurred during the treatment, as demonstrated in Study One, were a result of a gradual improvement over the course of the programme, or in response to specific components of the treatment, a trend analysis was conducted, looking for predicted linear trends, and for the presence of other trends. Each of the five measurements (the EDE-Q, the EES, the TAS, the DASS, and the PSS), and their subscales, were analysed separately.

## **Results**

### *Consumer Satisfaction and Evaluation of the Quality of the Treatment*

Overall, responses to the treatment programme recorded in the PEQ were positive, and the satisfaction ratings were high (see Table 12). The range for the three items presented on a 7-point Likert scale was five to seven.

Table 12  
*Women: Mean Ratings for the PEQ*

<b>Question</b>	<b>Mean Rating</b>
Have you enjoyed the programme?	6.33
Did you find the programme helpful?	6.65
Do you feel more positively about your eating patterns, particularly your binge eating?	6

Note:  $N=23$

Responses to the open-ended questions varied. When asked “What did you enjoy about the programme and why?”, recurring themes were working within a group structure, and the fact that the regular meetings created an opportunity to deal

systematically with issues. Positive comments regarding the therapist were given in answer to the question regarding enjoyment ( $n = 8$ ), and also often under “Do you have any other comments?” ( $n = 6$ ). Therapeutic alliance has been shown to be an important factor in treatment success (Swain-Campbell, Surgenor, & Snell, 2001). While therapeutic alliance was not directly assessed, positive comments towards the therapist may indicate that a therapeutic alliance had been established in these cases, and could have played an important role in the treatment outcome.

When asked “What did you not enjoy about the programme and why?”, several ( $n = 15$ ) women described not enjoying specific parts of the programme, although they acknowledged that the aspects were necessary components for positive change. Aspects that were listed as not enjoyable included: the amount of work; the need for changing bad habits; self-monitoring (as “it is uncomfortable to have to face up to the reality of binge eating”); and accountability (as it “makes me uncomfortable to be accountable for something I always felt was beyond my control”). Discussing problems in front of the group was also listed as not enjoyable by one woman, illustrating that group formats may not be enjoyable for everyone.

When asked “Did you find the programme helpful? If yes, what parts of the programme did you find of most use?” all components of the treatment programme were mentioned at least three times. The women reported that self-monitoring ( $n = 8$ ), basic nutrition ( $n = 15$ ), the influence of affect on bingeing and life generally ( $n = 8$ ), affect recognition ( $n = 14$ ), relaxation ( $n = 9$ ), problem solving ( $n = 10$ ), and assertion training ( $n = 13$ ) were of most use.

When asked “Did you find the programme helpful? If no, what parts of the programme did you find of little use?”, the majority left the second part of this question blank, or answered that no parts of the programme were of little use. However, several women acknowledged that some components held more personal relevance than others ( $n = 6$ ). One woman answered that she “didn’t always think it was useful until we started to investigate and then found it was in fact very helpful”. By “investigate”, she was referring to the continuation of the session, and the homework assigned to the session. This highlights the need to either employ the treatment package as a whole, or to assess individual participants carefully at each stage of treatment.

Various comments were made in response to the question “If you feel more positive about your eating patterns now, in what way did this programme help?” ( $n = 23$ ). The majority of the answers listed specific components or aspects of the programme that were found to be most influential towards feeling positive about eating ( $n = 18$ ). One woman summarised the helpful parts of the programme with the following: “oh yes, let me count the ways! This prog[ramme] gave me the tools and the awareness, and understanding of binge eating and most importantly how it applies to me and why, and exactly what to do. It’s helped my eating patterns for the past several months, almost eliminated binges, and set me up with a healthy plan to continue indefinitely, as well as what to do if I slip up”.

Several suggestions were made in response to the question “What improvements do you think could be made to the programme to help with your binge eating problems?” ( $n = 12$ ). A need for further nutritional training was cited ( $n = 3$ ), and one woman suggested cooking lessons with tips on how to prepare cheap meals for those on a budget. Other suggestions include: increasing the length of the programme as the current format was too short for one woman to allow for integration of newly learnt material ( $n = 1$ ); increasing the length of sessions to allow for breaks and for asking questions ( $n = 1$ ); phone support at the beginning of treatment and one-on-one sessions, with more individual feedback ( $n = 1$ ); and less reading from overheads during the psychoeducational parts of the programme ( $n = 1$ ). The discrepancy between the women who enjoyed the treatment presentation, and those who considered changing the presentation as a possible approach to improving the treatment, illustrates that the treatment package is not suitable to all women with BED.

When asked “Overall, how do you feel having completed the programme?”, most women either responded with “more in control of their eating and emotions” ( $n = 19$ ), “more informed”, “proud”, “refreshed”, “triumphant”, or positive words to that effect. Four women responded differently. After stating that she felt optimistic, one woman cited feeling “weary of losing control”. Another reported that she still felt overweight, but more accepting of this, and at the end of the programme she felt more normal. The third woman felt she was now ready to put more time into herself and her needs, and the fourth

noted that she now has the skills to deal with binge eating and related issues and acknowledged that the “trick is to do it”.

### *Session-by-Session Analysis*

Planned comparison linear trend analyses were used to determine whether a significant linear change occurred across time. A linear result indicates that improvements were gradual, and made over the course of the programme.

The means of the measures at each assessment are presented in Table 13, and the results from the linear analyses are presented in Table 14.

The analyses showed that the trends of the Eating, Shape and Weight Concerns of the EDE-Q were significantly linear, as were the trends of the Anxiety and Depression subscales and Total score of the EES. All the trends were associated with large effect sizes.

The trend of the Restraint subscale of the EDE-Q was not found to be significantly linear, and when other tests were performed, the subscale was not found to be significantly quadratic or cubic either. An ANOVA was computed using the sample of nine participants, and the subscale was not found to have changed significantly from assessment one to five ( $F[4] = 1.531, p = 0.251$ ), with a medium effect size across assessments (partial eta squared = 0.113).

The trend of the Anger subscale of the EES was not found to be significantly linear, but it was found to be significantly quadratic ( $F[1] = 7.04, p = 0.029$ ), with a large effect size (partial eta squared = 0.48).

The trend of the TAS was not found to be significantly linear, quadratic, or cubic. An ANOVA was computed using the sample of nine participants, and the variable was not found to have changed significantly from assessment one to five ( $F[4] = 1.282, p = 0.298$ ), although the effect size across assessments was medium (partial eta squared = 0.138). The medium effect size indicates that there may not have been sufficient participants in the sample to detect significant change across assessments for the TAS.

The trend of the PSS was not found to be significantly linear, quadratic, or cubic. An ANOVA was run using the sample of nine participants, and the variable was not found to have changed significantly from assessment one to five ( $F[4] = 0.558, p = 0.694$ ), and the effect size across assessments was medium (partial eta squared = 0.065).

The trend of the DASS subscales and Total score were not found to be significantly linear, quadratic, or cubic. ANOVAs were run using the sample of nine participants, and the variables were not found to have changed significantly from assessment one to five, although the effect size across assessments were medium (Depression subscale [ $F[4] = 0.919, p = 0.465$ , partial eta squared = 0.065]; Anxiety subscale [ $F[4] = 1.520, p = 0.220$ , partial eta squared = 0.160]; Stress [ $F[4] = 1.704, p = 0.173$ , partial eta squared = 0.173]; Total score [ $F[4] = 1.607, p = 0.197$ , partial eta squared = 0.167]).

Table 13  
*Mean Scores (and Standard Deviations) of Assessments One to Five*

SCALE	One <sup>a</sup>	Two <sup>a</sup>	Three <sup>a</sup>	Four <sup>a</sup>	Five <sup>a</sup>
EDE-Q					
Eating Concerns	2.58 (1.48)	2.11 (0.98)	1.71 (1.19)	1.58 (1.10)	1.13 (1.01)
Shape Concerns	3.68 (1.43)	3.24 (1.63)	2.42 (1.31)	2.53 (1.38)	2.19 (1.33)
Weight Concerns	3.29 (0.84)	2.60 (1.34)	2.27 (0.83)	2.16 (0.86)	1.82 (1.01)
Restraint	2.33 (1.30)	1.84 (1.33)	1.73 (1.53)	1.60 (1.58)	1.73 (1.30)
EES					
Anger	17.44 (5.66)	21.89 (7.74)	17.78 (5.45)	14.67 (5.96)	13.00 (8.15)
Anxiety	14.89 (7.13)	11.78 (5.47)	10.78 (5.14)	10.11 (4.73)	7.00 (5.55)
Depression	13.44 (3.17)	12.11 (4.07)	11.44 (3.28)	9.00 (3.04)	7.33 (3.97)
Total	45.78 (10.29)	44.67 (9.63)	40.00 (8.63)	33.78 (9.36)	27.33 (14.41)
TAS	44.78 (9.08)	45.67 (4.03)	46.22 (16.57)	41.22 (10.43)	40.89 (11.76)
DASS					
Depression	8.44 (5.27)	7.33 (3.81)	9.67 (9.92)	9.00 (7.70)	6.11 (3.59)
Anxiety	6.22 (5.14)	4.89 (3.82)	5.78 (4.58)	2.78 (1.86)	3.78 (4.82)
Stress	12.22 (5.26)	11.78 (5.04)	12.33 (7.95)	8.67 (5.63)	8.33 (5.27)
Total	26.89 (9.84)	24.00 (7.55)	27.78 (18.24)	20.44 (11.37)	18.22 (8.91)
PSS	28.67 (4.47)	27.67 (5.15)	29.00 (5.74)	27.89 (5.33)	26.33 (6.91)

<sup>a</sup>  $n = 9$

Table 14  
*Results of Linear Trend Analyses*

<b>SCALE</b>	<b>F-Statistic</b>	<b>p-Value</b>	<b>Effect Size</b>
EDE-Q			
Eating Concerns	16.989	0.003	0.680
Shape Concerns	10.755	0.011	0.573
Weight Concerns	11.229	0.010	0.584
Restraint	1.531	0.251	0.161
EES			
Anger	4.953	0.057	0.382
Anxiety	19.455	0.002	0.709
Depression	25.341	0.001	0.760
Total	18.190	0.003	0.695
TAS	3.015	0.121	0.274
DASS			
Depression	0.373	0.558	0.045
Anxiety	2.321	0.166	0.225
Stress	3.444	0.101	0.301
Total	4.367	0.070	0.353
PSS	0.493	0.502	0.058

Note: For all of the analyses, the degrees of freedom were (1, 8).

## Discussion

The first purpose of Study Two was to assess consumer satisfaction and evaluate the quality of the treatment programme. All 23 participants from Study One participated. The PEQ indicated that the women considered the treatment programme to be enjoyable and helpful, signifying that consumer satisfaction was high. The open-ended questions regarding these factors indicated that all components of the programme were endorsed by several women as enjoyable and useful. No components were listed as not helpful, though several women acknowledged that some components held more personal relevance than others ( $n = 6$ ). This illustrates the need to either employ the treatment package as a whole, or to carefully assess the needs of each individual at each stage of intervention. Although some sessions were listed as not enjoyable by some of the women ( $n = 15$ ), they were all considered important components for treating their binge eating and related issues effectively. Overall, a higher response rate was recorded for the open-

ended questions regarding the positive than the negative aspects of treatment. In addition to comments regarding specific components of the treatment, positive comments regarding the therapist were also recorded ( $n = 14$ ). This outcome reflects the results of Swain-Campbell and colleagues (2001) who also documented a greater response to positive aspects of the treatment, and a considerable number of positive comments regarding the therapist. Although therapeutic alliance was not measured directly in this study, positive comments regarding the therapist appear to indicate an alliance was formed between the therapist and those making the positive statements. A positive therapeutic relationship may have been related to the positive treatment outcome.

Several suggestions were made regarding improvements for the treatment ( $n = 12$ ), including additional nutritional training, increasing the length of the programme, increasing the length of sessions, phone support at the beginning of treatment, one-on-one sessions, and less reading from overheads during the psychoeducational parts of the programme. Some women considered that the length of sessions, and the programme overall, to be optimal, and some women considered the treatment presentation to be ideal. Thus, a similar programme that takes more than 12 weeks, longer sessions, and includes sessions with a greater level of interaction may be helpful to some individuals.

In sum, overall the women reported feeling very positive about their binge eating and related symptoms after treatment ended. It should be noted, however, that the participants were aware that the therapist would read their comments, and although they were told not to write their names on the forms, participants could have been aware that the therapist might recognise their writing and be able to identify them. This may have led to biases in responding and, with respect to the outcome, must be taken into consideration.

The second purpose of this study was to determine whether specific components of the treatment intervention were associated with the improvements measured in Study One, or whether the treatment as a whole produced the changes. Knowing which parts of the intervention are related to the greatest improvements would allow clinicians to place a greater focus on the aspects that treat BED effectively, while eliminating those that are unnecessary (e.g., Kazdin & Weisz, 1998). In order to assess mediators of therapeutic change, measures of the variables thought to be responsible for change must be taken



early in treatment (Wilson, 1999; Wilson, Fairburn, Agras et al., 2002). One way mediating variables can be determined is by using a session-by-session analysis (Wilson, 1999; Wilson et al., 2002).

This study used linearity or non-linearity of trends as indications of presence or absence of gradual change, and used the data obtained from nine participants. The trends of the Eating, Shape, and Weight Concerns subscales of the EDE-Q, and the Anxiety, Depression and Total Score of the EES were all found to be significantly linear with large effect sizes. These trends were not found to be significantly quadratic or cubic, indicating that the changes were made gradually from the beginning to the end of the treatment. Thus, for eating pathology, body image concern, and emotional eating to reduce, it appears that all components of the treatment are necessary to bring about significant improvements.

The trend of the Restraint subscale of the EDE-Q was not found to be significantly linear, quadratic, or cubic. An ANOVA was performed, and revealed that no statistically significant change occurred from pre- to post-treatment, although this result was associated with a medium effect size. As discussed in Study One, restraint is a heterogeneous concept that refers to rigid and flexible control, and dieting behaviour. The first sessions taught participants to plan their meals and snacks more effectively, using time of day and regular intervals between eating as guidelines. It is possible that those women who participated in this study were engaging in chaotic, irregular eating habits before treatment. Once they adhered to a regime of regular meals and snacks, a flexible and adaptive level of restraint was introduced, thereby effectively increasing eating restraint. These changes in behaviour with the associated change in definition of restraint may account for the medium change in restraint from before to after the intervention.

The trend of the Anger subscale of the EES was not found to be significantly linear, but it was found to be significantly quadratic with a large effect size. The means of the variable show that emotional eating in response to anger increased after the first component, so that it was higher than pre-treatment levels, then continued to reduce in subsequent assessments. By the end of the last assessment, emotional eating in response to anger was considerably lower than it was at pre-treatment. The reason for the increase following the first few sessions is unclear. It is possible that the first few sessions caused

the participants to increase their bingeing in response to anger. It is also possible that factors outside of the treatment were responsible for the change.

The trend of the TAS, DASS & PSS were not found to be significantly linear, quadratic, or cubic. Non-significant results were found using a ANOVAs to test for change, indicating that statistically significant change had not occurred from pre- to post-treatment. However, the results were accompanied by medium effect sizes, indicating that in fact a medium change had occurred from pre- to post-treatment for alexithymia, depression, anxiety, stress and perceived stress. It is likely that there were insufficient participants to detect statistically significant changes using the ANOVA.

Obviously, individual differences should not be overlooked. Tests of group significance cannot necessarily be applied to the individual. Thus, while on average many of the variables improved gradually over the course of the intervention, some individuals may have responded more greatly to the beginning of the intervention and may not have benefited from the rest of the treatment. Others, on the other hand, may not have responded to the first sessions of the treatment, and only improved after the last sessions. Others may have found that the skills they learnt in one component built on skills acquired in previous components.

Some limitations are worth mentioning. Although certain topics were covered in particular sessions, it is not known when participants actually incorporated, internalised, or behaviourally applied these topics. Unfortunately, in the context of these studies, determining when the taught information changed the participants' cognitive and behavioural approach was difficult to achieve. Future studies should focus on determining the influence of each part of the treatment by using the component in isolation from others. Testing the amount of change that results from each part of the treatment separately would allow researchers to determine whether all parts of the intervention are necessary to produce change. The length of the treatment can then be changed accordingly.

Additionally, not all women from the first study were asked to participate in the first part of this study. This was because the decision to perform the current investigation was not made until part way through Study One. A replication using a larger number of participants, and beginning from the time of first recruitment of participants, is needed.

In sum, although there was much variation, overall the results did not suggest that any one component played a stronger role than any other. It is recommended that the whole treatment intervention is used for treating groups of individuals with BED, but treatment should be tailored to individual needs when only treating one person. One of the benefits of treating BED over the course of some weeks was that problems that were not obvious in the first few treatment sessions become clearer over time. Furthermore, some of the women who participated in this study and in Study One had been living with BED for years. Whereas immediate improvements may be measured after the first few sessions, care must be taken to ensure that these effects last in the long term. If it appears that only a few treatment sessions are necessary, it is recommended that relapse prevention and maintenance sessions are still given.

## CHAPTER SIX:

### Study Three

#### *Efficacy of the Treatment with Men*

As many as 40% of individuals diagnosed with BED are men (Arnold, 1999; Becker et al., 1999; Hay, 1998; Wilson et al., 1993), yet very few studies have investigated BED in men (Costanzo, Musante, Friedman et al., 1999; deZwann, Nutzinger, Schoenbeck, 1993; Marchesini et al., 2002; Tanofsky et al., 1997), and many studies have specifically excluded men in favour of researching BED in women only (e.g., Carter & Fairburn, 1998; Loeb et al., 2000; Pendleton et al., 2002).

Striegel-Moore and colleagues (1998) documented that men with BED report greater dissatisfaction with their body image and weight than do men without BED. Other preliminary investigations comparing men and women with BED have shown that there are many similarities between the sexes (e.g., Spurrell et al., 1997; Striegel-Moore et al., 1998; Tanofsky et al., 1997), but some differences have also been documented.

Demographic variables such as age of first overweight, and frequency of weight loss and regain, have been found to be the same in men and women (Barry, Grilo, & Masheb 2002; Striegel-Moore et al., 1998). As yet, no definitive conclusions regarding the age of first regular binge eating, and age of first diet, can be drawn. Barry and associates (2002) found no differences between men and women on age of first overweight, age of first diet, age of onset of binge eating, or number of weight cycles, whereas Striegel-Moore and associates (1998) found that women with BED began dieting at a significantly younger age than men with BED.

Men with BED appear to have a higher frequency of Axis I diagnoses than women with the eating disorder (Spurrell et al., 1997; Tanofsky et al., 1997), and women are more dissatisfied with their body and weight, and report a greater drive for thinness than men (Barry et al., 2002; Striegel-Moore et al., 1998). While binge eating has been linked to low self-esteem in both men and women (Barry et al., 2002; Tanofsky et al., 1997), others have found self-esteem is only linked to binge eating in women (Costanzo et al., 1999; Striegel-Moore et al., 1998). Further investigations are needed to determine which variables affect the etiology and maintenance of threshold and subthreshold BED

in men.

As BED in men has been rarely studied (e.g., Tanofsky et al., 1997) it is not surprising that very little is known about the role of emotion regulation. Although the first major study investigating emotional eating in men found that men did not report emotional eating, the authors suggest this was because men are either less likely than women to connect their eating to their emotions, or if they do make a connection, are less likely to report emotional eating (Tanofsky et al., 1997). Subsequent investigations, however, have indicated that binge eating in men is in fact linked to emotional dysregulation (Costanzo et al., 1999; Keel, Klump, Leon et al., 1998). Costanzo and associates (1999) investigated binge eating and emotional distress in 288 self-admitted patients in a weight-loss residential centre. Both men ( $n = 81$ ) and women ( $n = 207$ ) were more likely to binge eat when dietary restraint was disinhibited, and when they experienced higher levels of depression. Also, binge eating was linked to anger in men, but not in women. The authors suggest that binge eating may be a behavioural expression of suppressed emotions in men, which is encouraged by socialisation processes. Keel and colleagues (1998) investigated three groups of 27 adolescent males: one group was assessed as having disordered eating using the EDI (Garner, Olmstead, & Polivy 1983); another was a control group who were matched on gender, age, height, weight and ethnicity to the eating disordered group; and the third was a randomly selected group. The study found that body dissatisfaction, depression, restraint, perfectionism, and poor interoceptive awareness, were linked to disordered eating. Poor interoceptive awareness, or negative emotionality and difficulty distinguishing between emotional states, held the strongest relationship with disordered eating. However, the researchers were not able to determine the extent to which negative affect contributed to the development of eating disorders. Despite being limited by the absence of formal diagnoses, the outcomes of these investigations suggest that negative emotionality and binge eating are linked in men.

Interoceptive awareness and alexithymia are highly related (Larsen, van Strien, Eisinga et al., 2006), and a higher level of alexithymia has been observed in men compared to women in the general population (Lane, Sechrest, & Riedel, 1998; Parker et al., 2003). Alexithymia is a multidimensional construct that includes the inability to

recognise affect, the inability to distinguish between physiological arousal and emotions, and, among other things, the inability to describe affective states to other people (e.g., Nemiah et al., 1976). In a study comparing obese men ( $n = 70$ ) and women ( $n = 340$ ), Larsen and associates (2006) found, after controlling for depression, that men reported significantly more alexithymic traits than did women. Additionally, emotional eating was found to correlate significantly with higher levels of alexithymia in both men and women. Further investigations revealed that the relationship between emotional eating and alexithymia, particularly difficulty in identifying feelings, was stronger for men than women.

Comparisons of response to treatment between men and women with eating disorders has been limited to AN and BN (for a review, see Woodside, 2002). No published studies have compared response to treatment in women and men with BED. One of the difficulties of performing treatment studies for BED in men is the general reluctance of men to seek treatment relative to women (Weltzin, Weisensel, Fanczyk et al., 2005).

The purpose of the current study was to determine the extent to which alexithymia and binge eating occur in men, and to measure the responses to treatment of men diagnosed with subthreshold or threshold BED. The treatment programme, aimed at teaching emotional recognition and regulation skills, was the same as the one used in Study One. A measure evaluating the men's responses to the treatment programme (the PEQ), which was the same as that used in Study Two, was administered at the end of treatment. This was given to assess consumer satisfaction, and for quality control of the programme.

## **Method**

### *Participant Recruitment*

Advertisement using notices were posted in the psychology department, health services, counselling services, and halls of residence at the University of Canterbury. A large advert, with an accompanying editorial describing binge eating disorder, was placed

in three local free newspapers on November 2<sup>nd</sup> 2003, and again on November 30<sup>th</sup> 2003 (Appendix 1). *The Observer*, *The News Advertiser*, and *The Pegasus Post* are circulated to the majority of Christchurch residents. A small notice was placed in the Princess Margaret Hospital eating disorders unit newsletter. Lastly, small notices were placed in the classified news paper *The Buy Sell and Exchange*, and in *The Bromley local newsletter*.

### *Procedure*

*Selection Procedures.* Men, aged between 18 and 65 years, were initially invited to come to the University of Canterbury to fill in the BES (Gormally et al., 1982) and the QEWP (Spitzer et al., 1993). Those who demonstrated binge eating symptoms were asked to return for the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993).

Interviews were conducted by the author, Courtney Clyne. For the sake of efficiency, questions used for diagnosis were obtained during the interview, while those used for assessing related eating, weight and shape overconcern and restraint were omitted. These were assessed instead using the questionnaire form of the EDE, the EDE-Q (Fairburn & Beglin, 1994).

Men who met all the criteria for BED according to the EDE and met the remaining DSM-IV-TR criteria (three or more of the following: eating much more rapidly than normal; eating until uncomfortably full; eating large amounts of food when not feeling physically hungry, eating alone because of being embarrassed by how much one is eating; and/or feeling disgusted with oneself, depressed, or very guilty after overeating) were diagnosed with threshold BED. Men who met all the criteria for BED according to the EDE and the additional DSM-IV-TR criteria, but who binged less than twice per week, but no less than once in the past 28 days, and/or whose binges were classified as subjective bulimic episodes, were diagnosed with subthreshold BED. Men meeting the criteria for subthreshold or threshold BED were included in this study. The EDE-Q (Fairburn & Beglin, 1994) was used to assess levels of restraint, eating concerns, and shape and weight concerns. Levels of emotional eating were measured using the EES (Arnold et al., 1995).

Men who reported purging and/or compensatory behaviours to control their shape or weight on the QEWP (as outlined by Spitzer et al., 1993), were not included in the study, and were not assessed using the EDE. Instead, a letter was sent to outlining the assessment results (see Appendix 3), advising them to consult their physician regarding these findings, and were offered alternative treatment facilities to contact. Men who exhibited symptoms for anorexia nervosa, including frequent occurrence of fasting, and extreme exercise behaviours on the QEWP (as outlined by Spitzer et al., 1993), were also excluded from the study, and were offered referrals to alternative treatment facilities. Measurements of depression, anxiety, stress and perceived stress, coping ability, and attention to, and attitude towards, emotion regulation along with change in cognition were taken at pre-treatment and post-treatment, and at three, six, and 12-months follow-up.

#### *Selection Instruments and Measurements of Other Symptoms*

The selection instruments were the QEWP, EDE, and the EDE-Q. Diagnoses were established using the EDE. The BES, the EES, and the TAS, were used to assess change in eating and related pathological symptoms. For an outline of the measures used in this study, refer to the Method section in Study One. Notably, the measures used here have all been administered using male participants in previous research (e.g., Arnow et al., 1995; Bagby et al., 1994; Grilo et al., 2003; Reas et al., 2006; Wilfley et al., 1997). The BES has been used to compare responses between men and women, and no sex differences were found (Gormally et al., 1982).

#### *Follow-Ups*

Diagnoses were established using the shortened version of the EDE, and associated symptoms were assessed using the EDE-Q, BES, EES, and the TAS.



### *Programme Evaluation Measure*

The PEQ was used to evaluate the men's responses to the treatment programme.

### *Treatment Procedure*

The treatment programme was the same as that used in Study One.

### *Analyses*

A description of the participant recruitment phase, and then of the demographic of the participants in this study are presented. Single-case investigations and descriptions of change across assessments are given for BMI, diagnostic status and self-monitoring records. As there were so few participants recruited for the study, statistical analyses were not possible as the power was likely to be too low to detect change. Thus, change was assessed using descriptive statistics and effect sizes (partial eta squared). The results of the PEQ are then described.

## **Results**

A total of six men responded to advertising. One man did not fit the criteria for an eating disorder, one displayed symptoms of bulimia nervosa and was referred for alternative treatment, and one man fitted the criteria for BED but chose not to participate in the treatment programme. Thus, three men participated in this study and completed treatment. Multiple baselines were taken for the three men, where participant one was measured for 27 weeks in baseline, participant two was measured for 21 weeks of baseline, and participant three was measured for 20 weeks of baseline. Treatment started at week 28, and monitoring continued for 11 weeks during the intervention.

### *Demographics*

*General.* Demographic characteristics are shown in Table 15. The men varied greatly in age, ranging from 25 to 59, but other variables were similar between the men.

*Changes in BMI.* Normal and overweight is defined as a BMI of  $\geq 18.5 \leq 29.9$ , obesity is defined as a BMI of  $\geq 30 \leq 39.9$ , and severe obesity is defined as a BMI of  $\geq 40$  (National Heart, Lung, and Blood Institute, 1998). At no stage were any of the participants categorised as extremely obese.

Very little change in BMI occurred in the three men over the course of the investigation. From baseline to 12-months follow-up, one participant was obese, and two participants were of normal BMI or overweight.

Table 15  
*Age, Ethnicity, and Education Level of the Men*

Age	
Mean	40.33 (SD = 17.24)
Ethnicity	
NZ European	2
USA European	1
Education Level	
High School (or less)	0
Tertiary	3
BMI	
Normal/Overweight	2
Obese	1

$n = 3$

### *Diagnostic Status, Eating and General Associated Pathology*

*Diagnostic Status.* Threshold BED was diagnosed in accordance with the proposed criteria in the DSM-IV-TR (APA, 2000). Subthreshold BED was diagnosed if all inclusion criteria were met except below threshold binge eating size and/or frequency.

At 3-months before treatment, two participants met the diagnostic criteria for subthreshold BED (participant one (see Table 16) and participant two (see Table 17)), and one (participant three) met the criteria for threshold BED (see Table 18).

At pre-treatment, all three participants met the criteria for subthreshold BED. While the diagnosis of participant one did not change from baseline to pre-treatment, binge size had reduced from OBEs to SBEs, and bingeing had increased in frequency. Participant three spontaneously improved and no longer met the criteria for threshold BED. While the size of binges remained the same (OBEs), the frequency reduced to under threshold.

At post-treatment, two no longer met the criteria for an eating disorder, and one met the criteria for subthreshold BED. Participant one did not change over the course of treatment but Participant two and three ceased bingeing.

At 3-months follow-up, all three participants met the criteria for subthreshold BED. Participants one and two did not change from post-treatment to 3-months follow-up. Participant three resumed bingeing, but at a reduced size than from baseline and pre-treatment.

At 6-months follow-up, one did not meet the criteria for an eating disorder, and two met the criteria for subthreshold BED. Participant one and two did not change from 3-months follow-up. Participant three increased the size of binge episodes from 3-months follow-up, but decreased the rate to below baseline levels.

At 12-months follow-up, one met the criteria for subthreshold BED, and two did not meet the criteria for an eating disorder. Participant one and two did not change from 6-months follow-up and participant three ceased bingeing.

It should be noted that participant one binged only in the middle of the night, after going to sleep and waking up again. Thus, while he met the criteria for subthreshold BED (SBEs at a frequency of greater than twice per week), he also met criteria outlined by Stunkard and associates (1996) for night eating syndrome, which include lack of appetite in the morning, overeating in the evening and consumption of greater than 50% of daily calories after 7pm.

Table 16

*Changes in Diagnostic Status from Pre-treatment to 12-Months Follow-up:  
Participant One*

Assessment Time	Diagnosis	Binge Type	Frequency	Changes
Baseline	Sub <sup>a</sup>	SBEs <sup>b</sup>	$\geq 2$ <sup>c</sup>	
Pre-treatment	Sub <sup>a</sup>	SBEs <sup>b</sup>	$\geq 2$ <sup>c</sup>	None
Post-treatment	Sub <sup>a</sup>	SBEs <sup>b</sup>	$\geq 2$ <sup>c</sup>	None
3-Month Follow-up	Sub <sup>a</sup>	SBEs <sup>b</sup>	$\geq 2$ <sup>c</sup>	None
6-Month Follow-up	Sub <sup>a</sup>	SBEs <sup>b</sup>	$\geq 2$ <sup>c</sup>	None
12-Month Follow-up	Sub <sup>a</sup>	SBEs <sup>b</sup>	$\geq 2$ <sup>c</sup>	None

<sup>a</sup> Subthreshold BED    <sup>b</sup> Subjective Bulimic Episodes    <sup>c</sup>  $\geq 2$  times per week

Table 17

*Changes in Diagnostic Status From Pre-treatment to 12-Months Follow-up:  
Participant Two*

Assessment Time	Diagnosis	Binge Type	Frequency	Changes
Baseline	Sub <sup>a</sup>	OBEs <sup>b</sup>	$\leq 2$ <sup>d</sup>	
Pre-treatment	Sub <sup>a</sup>	SBEs <sup>c</sup>	$\geq 2$ <sup>e</sup>	Reduced sized binges, more frequent episodes
Post-treatment	None			No binge episodes
3-month follow-up	Sub <sup>a</sup>	SBEs <sup>c</sup>	$\leq 2$ <sup>d</sup>	Reduced size bingeing resumed
6-month follow-up	None			Bingeing ceased
12-month follow-up	None	SBEs <sup>c</sup>	$\geq 2$ <sup>e</sup>	Bingeing resumed but not distressed as not large and not frequent.

<sup>a</sup> Subthreshold BED    <sup>b</sup> Objective Bulimic Episodes    <sup>c</sup> Subjective Bulimic Episodes  
<sup>d</sup>  $< 2$  times per week    <sup>e</sup>  $\geq 2$  times per week

Table 18  
*Changes in Diagnostic Status from Pre-treatment to 12-Months Follow-up:  
 Participant Three*

Assessment Time	Diagnosis	Binge Type	Frequency	Changes
Baseline	Thres <sup>a</sup>	OBEs <sup>c</sup>	$\geq 2$ <sup>e</sup>	
Pre-treatment	Sub <sup>b</sup>	OBEs <sup>c</sup>	$\leq 2$ <sup>f</sup>	Less frequent episodes
Post-treatment	None			Bingeing ceased
3-month follow-up	Sub <sup>b</sup>	SBEs <sup>d</sup>	$\leq 2$ <sup>f</sup>	Smaller binges than before treatment
6-month follow-up	Sub <sup>b</sup>	OBEs <sup>c</sup>	$\leq 2$ <sup>f</sup>	Binge size increased again, but rate is less than before treatment
12-month follow-up	None			Bingeing ceased.

<sup>a</sup> Threshold BED <sup>b</sup> Subthreshold BED <sup>c</sup> Objective Bulimic Episodes

<sup>d</sup> Subjective Bulimic Episodes <sup>e</sup>  $\geq 2$  times per week <sup>f</sup>  $< 2$  times per week

#### *Self-Monitoring Data Taken From Baseline to Post-Treatment*

Self-monitoring was taken from baseline to the end of treatment, but was not recorded through the follow-up assessments. First, binge episodes with a loss of control were categorised as either subjective bulimic episodes (SBEs) or objective bulimic episodes (OBEs). To be classified as an OBE, the episode had to meet criteria outlined by Fairburn and Cooper (1993, p.339-340). To be classified as an SBE, the amount of food consumed in the episode had to fall short of the criteria for an OBE, or be insufficiently described to be categorised as an OBE. Second, self-reported binge episodes were classified as any overeating episode with a loss of control (i.e., the total of SBEs added with OBEs).

Multiple baselines were taken for the three male participants, where participant one was measured for 27 weeks in baseline, participant two was measured for 21 weeks of baseline, and participant three was measured for 20 weeks of baseline. Treatment started at week 28, and monitoring continued for 11 weeks (until week 38 on Figures 14-16) during the intervention.

Participant one's binge rate (self-reported, OBEs, and SBEs) changed very little from baseline to post-treatment.

Participant two reported one to three binge episodes over the course of baseline, and at three weeks prior to treatment, self-reported binges dropped to zero per week. In the week before treatment, self-reported binges increased back to three, then dropped briefly, before increasing substantially over the following three weeks. At the fifth week of treatment, no binges were reported, but increased to three to four binges over the following five weeks. During the last week of treatment, self-reported binge rate had decreased to one. Participant two only reported one OBE at week 16 of baseline, all other self-reported binge episodes were categorised as SBEs.

Participant three also reported a variable range of binge episodes, with an overall decreasing trend. At week seven of baseline, when he began recording binges, participant three reported six episodes. At week 11, no binges were reported, but these increased gradually over the next five weeks of baseline. After dropping to one reported episode at baseline week 17, self-reported binge episodes remained stable at two or three per week until week 30 (the third week of treatment), where no binge episodes were recorded. Self-reported bingeing steadily increased over the following three weeks, then dropped to zero at weeks 35 and 36 (the sixth and seventh weeks of treatment). After increasing to two binge episodes for week 35, binges dropped steadily, and stayed at zero for the last two weeks of treatment. Self-reported binge episodes for participant three were categorised as a mix of OBEs and SBEs.

Figure 14  
*Self-reported Self-monitoring Results*

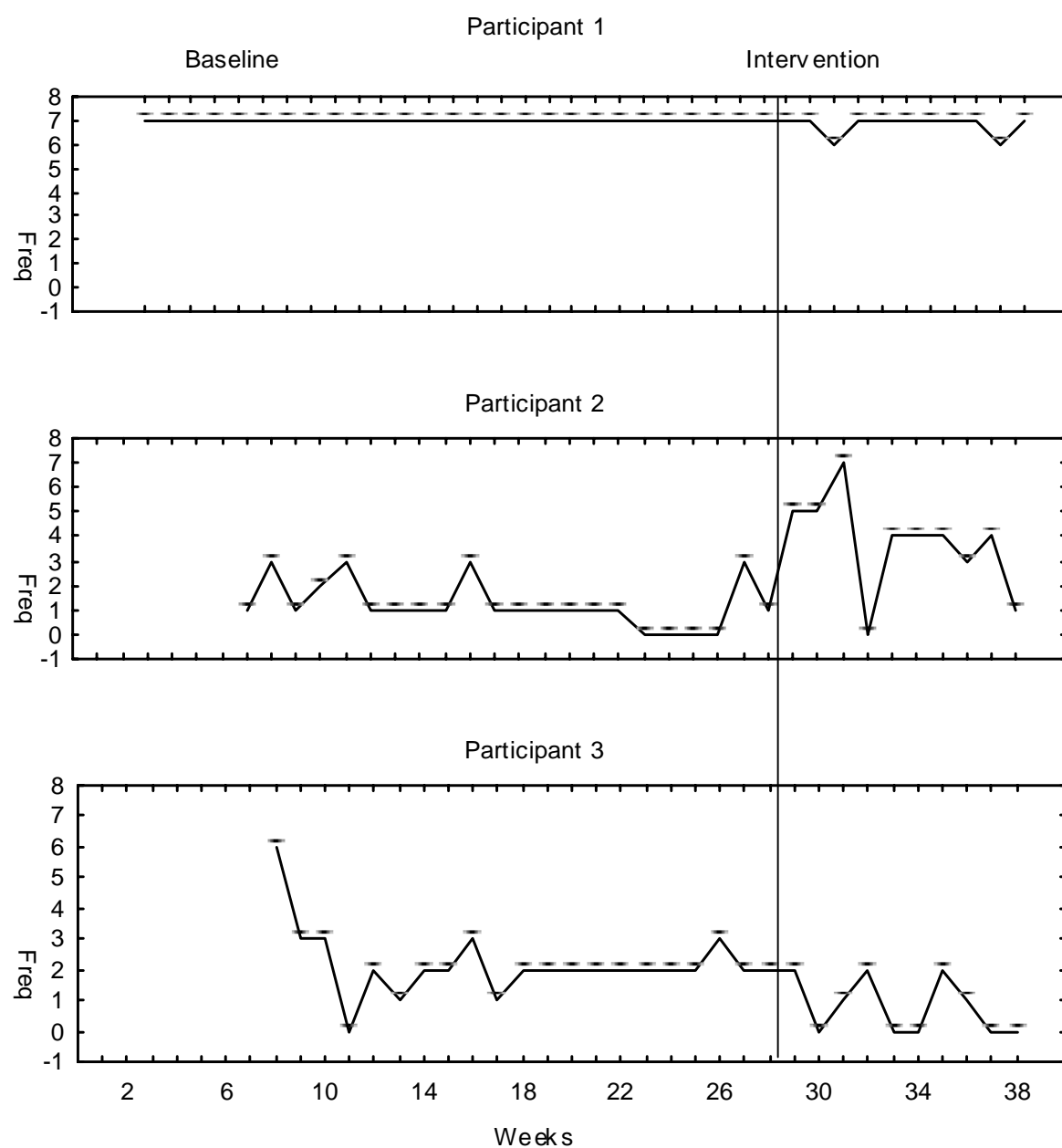


Figure 15  
*Self-monitoring Results; OBEs*

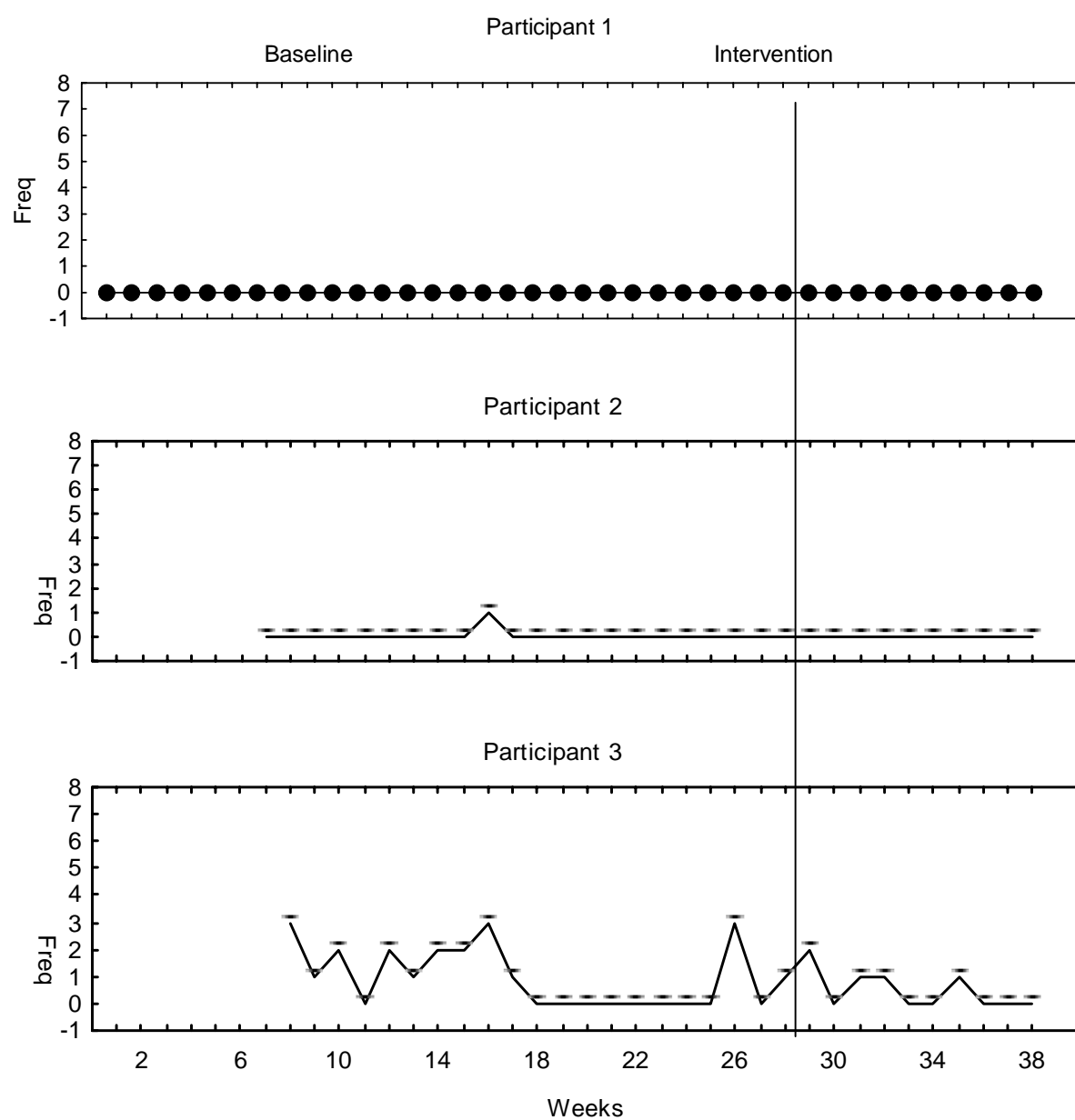
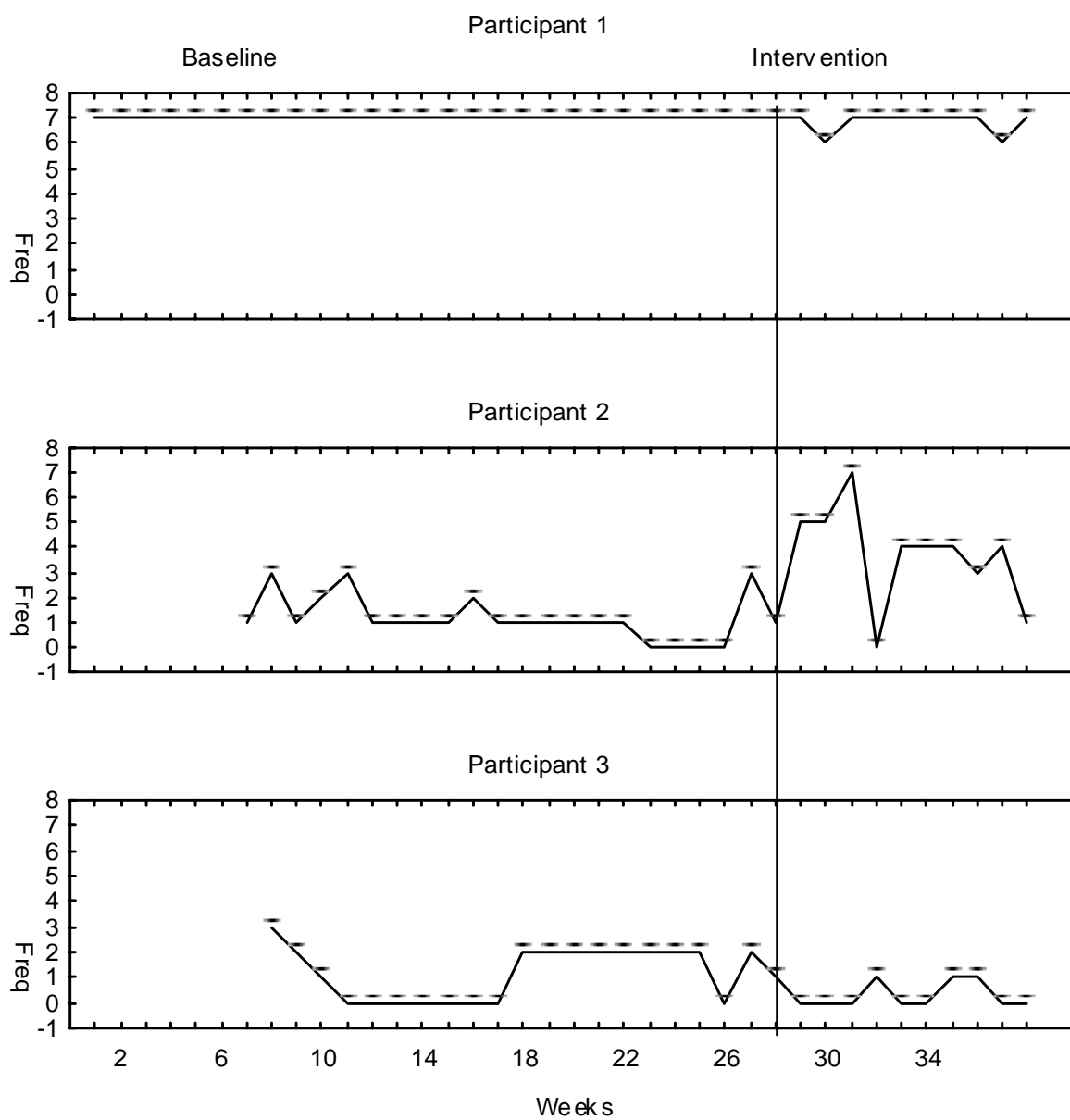




Figure 16  
*Self-monitoring Results; SBEs*



### *Eating and General Associated Pathology*

The mean scores of the dependent variables were calculated (see Table 19 and Figures 17-20), and effect sizes (partial eta squared) were also calculated (see Table 20). Effect sizes were categorised as small, medium, or large using Cohen's (1977) methods.

A reduction in mean scores was observed from pre- to post-treatment in all of the variables except the Depression subscale of the EES (see Figure 19). The Depression subscale effect size showed a small difference pre- to post-treatment, and also showed a small improvement in the Eating and Shape Concerns and Restraint subscale of the EDE-Q (see Figure 17). Effect sizes also showed a large improvement in the Weight Concerns subscale of the EDE-Q, the BES (see Figure 18), the Anger and Anxiety subscales and Total score of the EES (see Figures 19), and a medium improvement in the TAS (see Figure 20).

Although the mean scores showed some fluctuation in the variables from post-treatment and across follow-ups, many of the effect sizes were small, indicating that all changes were minimal.

From post-treatment to 3-months follow-up, a small effect size showed that very little had changed in the majority of the variables. However, the means of the Weight Concerns and Restraint subscales of the EDE-Q had increased and these were accompanied with medium effect sizes.

From 3- to 6-months follow-up, the majority of the variables were associated with a small effect size, showing that they did not change considerably during this period. However, the Eating and Weight Concerns subscales of the EDE-Q were associated with medium effect sizes, and the means showed that these variables had improved.

From 6- to 12-months follow-up, the Eating, Shape and Weight Concerns subscales of the EDE-Q, the Anxiety subscale of the EES, and the TAS were associated with small effect sizes. The Restraint subscale of the EDE-Q showed a medium effect size, and the means of the 6- and 12-month assessments showed that this variable had improved. The means of the BES, and the Anger and Depression subscales and Total score of the EES all showed a relapse, and were associated with a medium effect size.

As many of the variables fluctuated over the course of 12-months follow-up after treatment ended, to determine the overall change a comparison between post-treatment and 12-months follow-up was performed. The effect sizes showed a small difference between post-treatment and 12-months follow-up for the Weight Concerns and Restraint subscales of the EDE-Q, and for the TAS. A medium difference was found between post-treatment and 12-months follow-up for the Eating Concerns subscale of the EDE-Q. The

effect sizes of the Shape Concerns subscale of the EDE-Q, the BES, and the subscales and Total score of the EES showed a large change from post-treatment to 12-months follow-up. The means of all of the variables, except the Depression subscale of the EES, showed that the change was positive.

Table 19  
*Mean Scores of Dependent Variables*

<b>SCALE</b>	<b>Pre-Treatment</b>	<b>Post-Treatment</b>	<b>3-Months Follow-up</b>	<b>6-Months Follow-up</b>	<b>12-Months Follow-up</b>
EDE-Q					
Eating Concerns	2.20	1.87	2.33	1.47	1.47
Shape Concerns	4.10	3.40	3.53	2.73	3.20
Weight Concerns	2.87	2.33	3.07	2.40	2.33
Restraint	2.13	1.80	2.53	2.13	1.73
BES	22.67	14.00	14.00	13.33	15.67
EES					
Anger	20.00	15.33	13.00	12.67	16.67
Anxiety	17.00	9.33	11.00	11.00	13.00
Depression	11.00	11.67	11.33	10.33	12.33
Total Score	48.00	36.33	35.33	34.00	42.00
TAS	55.33	48.00	47.00	51.00	49.00

Table 20

*Effect Sizes for the Dependent Variables from Pre- to Post-Treatment, and from Post-Treatment to 12-Months Follow-up*

SCALE	Pre- to Post-Treatment	Post-Treatment to 3-Months Follow-up	3- to 6-Months Follow-up	6- to 12-Months Follow-up	Post-Treatment to 12-Months Follow-up
EDE-Q					
Eating Concerns	0.033	0.037	0.141	<0.000	0.133
Shape Concerns	0.047	0.001	0.056	0.040	0.520
Weight Concerns	0.105	0.070	0.062	0.002	<0.000
Restraint	0.025	0.084	0.028	0.063	0.013
BES	0.885	<0.000	0.005	0.080	0.157
EES					
Anger	0.570	0.055	0.001	0.198	0.533
Anxiety	0.562	0.016	<0.000	0.027	0.761
Depression	0.014	0.002	0.014	0.108	0.222
Total	0.461	0.001	0.002	0.117	0.884
TAS	0.121	0.003	0.038	0.006	0.046

Note: Effect Size = partial eta squared.

Figure 17

*The EDE-Q From Baseline to 12-Months Follow-Up*

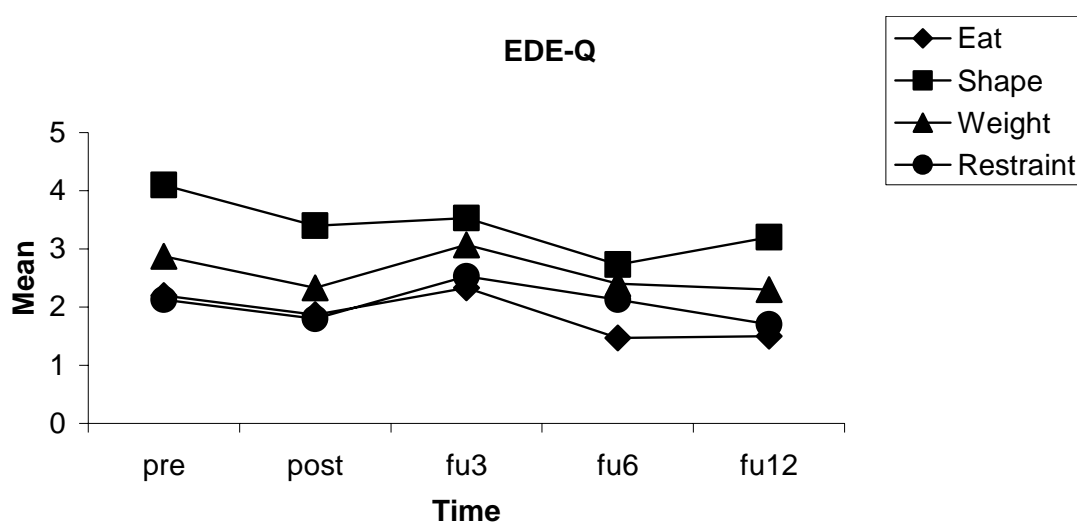


Figure 18  
*The BES From Baseline to 12-Months Follow-Up*

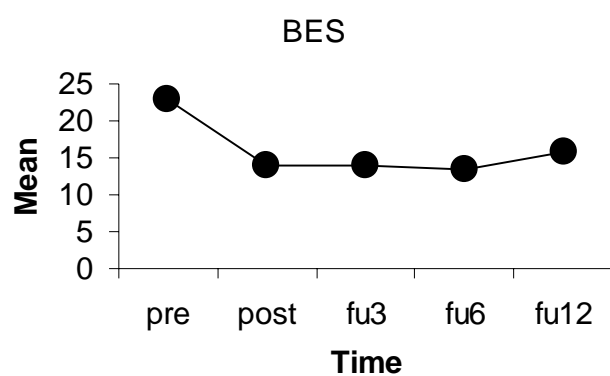


Figure 19  
*The EES From Baseline to 12-Months Follow-Up*

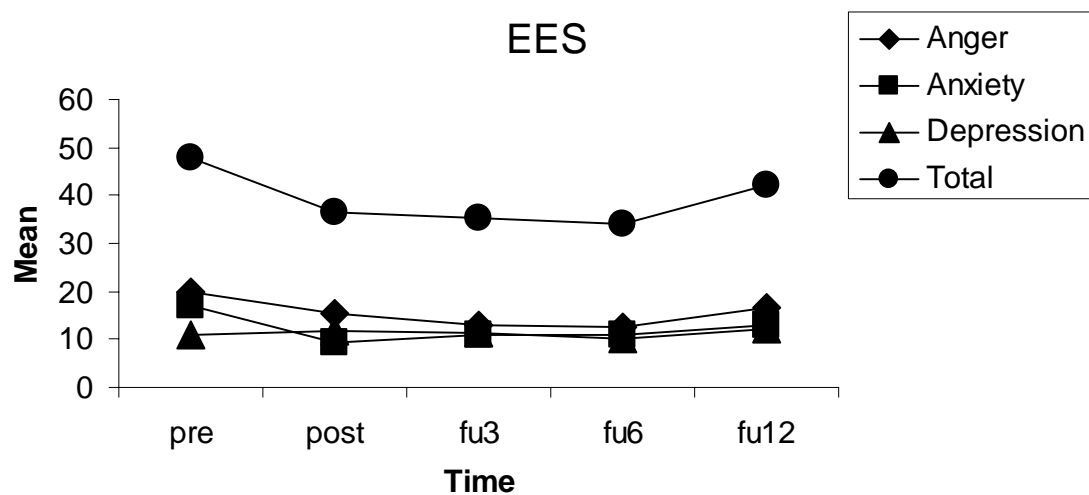
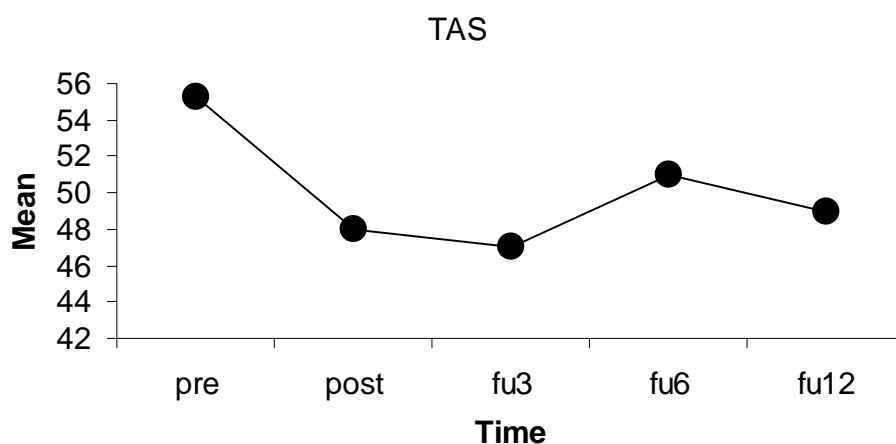


Figure 20  
*The TAS From Baseline to 12-Months Follow-Up*



*Consumer Satisfaction and Evaluation of the Quality of the Treatment*

Overall, the response to the treatment programme recorded in the PEQ was positive, and the satisfaction ratings were moderate to high (see Table 21). The range for the three items presented on a 7-point Likert scale was five to seven.

Table 21  
*Men: Mean Ratings for the PEQ*

Question	Mean Rating
Have you enjoyed the programme?	5.67
Did you find the programme helpful?	6.33
Do you feel more positively about your eating patterns, particularly your binge eating?	5.67

Responses to the open-ended questions were diverse. When asked “What did you enjoy about the programme and why?”, the men replied with various answers including group participation ( $n = 1$ ), having an outline handout of each session to take home ( $n = 1$ ), and the content of the programme (which helped one man to understand the impact his

emotions was having on his eating habits), as enjoyable. One man also stated that it was great to have a grasp on what causes his binges, and another stated that he derived enjoyment from successfully ceasing binge eating. Further, two of the three men responded with positive comments regarding the therapist.

When asked “What did you not enjoy about the programme and why?”, one man reported that the presentations were at times too fast, and two reported that the sessions were too long.

When asked “Did you find the programme helpful? If yes, what parts of the programme did you find of most use?”, two of the three men reported that emotion recognition training was most useful. Other components that were mentioned include self-monitoring, basic nutrition, relaxation training, and problem solving.

When asked “Did you find the programme helpful? If no, what parts of the programme did you find of little use?”, all three men left this blank.

In answer to the question “If you feel more positive about your eating patterns now, in what way did this programme help?”, being accountable to, and support from, the investigator, weekly contact, homework assignments, and self-monitoring were mentioned.

All three men responded to the question “What improvements do you think could be made to the programme to help with your binge eating problems?”. One reported that one-on-one sessions would be of assistance, one mentioned more contact during the first part of the programme and more peer support during it, and one reported that the programme should be lengthened for those with unresolved issues. One man also reported that changing the format of the self-monitoring form, which he found confusing, would be helpful.

All three men responded positively to the question: “Overall, how do you feel having completed the programme?”. Responses included an increased sense of control over eating, and “good” and “happy” about the newly integrated eating patterns. One man responded “that I can make changes I felt were not possible previously”.

## Discussion

Of those people that are diagnosed with BED, a high proportion are men (e.g., Arnow, 1999; Becker et al., 1999), and yet, whereas there are studies that test how women and men combined respond to treatment, few have investigated specifically how men with BED respond. This study was a case series and a pilot investigation that aimed to measure response to treatment in men with BED. Research has indicated that binge eating and affect regulation deficits are linked in men (Costanzo et al., 1999; Keel et al., 1998). Thus, it was suspected that the treatment programme used with the women in Study One, and that focused primarily on teaching emotional discrimination and management, would produce a positive outcome in men with BED.

Although diagnostic status fluctuated considerably across assessments, 66% (two of three) of the men could no longer be diagnosed with an eating disorder one year after treatment ended. Bingeing, as measured by self-monitoring forms, was also inconsistent from baseline to post-treatment. One participant did not change in response to treatment, one still binged at a rate of approximately one binge per week, and the other had ceased bingeing.

Notably, the diagnostic status of one participant did not change over the course of treatment, possibly owing to the fact that his bingeing was more often than not performed at night. On closer inspection, it may have been more accurate to have assessed him as having NES than BED, despite the fact that his symptoms fit the criteria for subthreshold BED. Further medical assessment showed that he was also suffering from sleep apnoea, which could have had an influence on his frequent awakenings and inclination to eat at night. Despite being disappointing, the lack of change observed in this participant was not surprising. It does, however, suggest that treatments aimed at treating BED may not be relevant for those suffering from NES. Future research directly assessing this question is needed.

Unfortunately, due to low statistical power and stability resulting from low participant numbers, tests of statistical significance could not be performed. Subsequently, partial eta squared effect sizes were examined as measures of change. From pre- to post-treatment, the effect sizes showed that large changes had been made in



weight concerns, emotional eating in response to anger and anxiety, and in binge eating. Effect sizes also showed a medium improvement had been made in alexithymia. Notably, only small improvements were found for eating and shape concerns, restrained eating, and emotional eating in response to depression. Due to the small number of participants, and the lack of statistical testing, it is difficult to determine the reason for the lack of change in these variables. It seems unusual that whereas binge eating improved to a large degree, eating concerns had not. One speculation for this is that a difference in men's actual eating occurred, but that it was not accompanied with a change in perception of that eating. Another possibility is that the men's actual binge eating had improved, but their confidence in maintaining their new behaviour was low. If the lack of change in eating concerns is taken into consideration in conjunction with the lack of change in concerns about shape, it could also be possible that while binge eating had improved markedly, existing shape concerns and the effect that any food intake had on that, may have caused the lack of change in eating concerns. Future studies would do well to test whether these variables continue to remain unchanged following the treatment employed in this study with a larger group of men. If such studies find that these variables do indeed remain unchanged, investigations should then test the efficacy of including additional components that: address shape concerns; expand on the existing nutritional components, and promote healthy eating that influences shape in a positive way; and/or components that advance self-efficacy regarding maintaining improved binge eating behaviour.

The effect sizes of the follow-ups indicated that no or minimal changes had occurred for most of the variables at most assessments after post-treatment. This may suggest that, of the symptoms that had improved, many of the treatment effects were maintained well up to six months after treatment ended. Interestingly, from six months post-treatment to one year following treatment ending, binge eating and emotional eating in response to anxiety and anger had relapsed (indicated by medium effect sizes between 6- and 12-months follow-up). The relapses in bingeing and emotional eating indicate that these treatment gains were not maintained up to one-year following treatment, and may suggest that "booster" sessions after six months following treatment ending could be beneficial for these symptoms.

Notably, not only did eating restraint not appear to change considerably from pre- to post-treatment, but it also seemed to vary across assessments. It is also possible that the men were not exercising restraint before or after the treatment; that the Restraint Subscale is not a valid measure of restraint in men, and that the participants changed their subjective definition of restraint; or that the treatment did not adequately address restrained eating in men. Further research on the validity of using the EDE-Q to measure eating and related pathology BED in men is needed to determine the cause of the lack of observed change in the measure.

Whereas a large improvement in concerns regarding weight had been observed from pre- to post-intervention, at 3-months follow-up this seemed to have relapsed (as evidenced by a medium effect size). Oddly, concerns regarding weight then improved at 6-months follow-up, and remained so at 12-months follow-up. As none of the treatment components directly target weight loss, it is difficult to explain the cause of this fluctuation. As there was such a small group of men, it is possible that one man's responses to the Weight Concerns items of the EDE-Q influenced the others, resulting in the fluctuation. Another explanation is that all three men fluctuated in their actual weight, and their concerns matched this change. Although this is unlikely as the analysis of the changes in BMI showed that very little changes had occurred from pre-treatment to 12-months follow-up, it is possible that the fluctuations did not show up in the analysis, and that changes in actual weight were responsible for changes in weight concerns. Lastly, it is possible that the men were unable to remain positive regarding their weight after treatment ended, but felt more positive about it when it was clear that their binge eating had not resumed. Using a greater number of participants, future studies need to determine whether men's concerns regarding their weight are as unstable as the results of the present study suggest. They should also determine the extent to which men's actual weight changes, and if changes are considerable, how much these changes influence the men's concerns regarding their weight. As weight is often an issue for those with BED (e.g., Masheb & Grilo, 2000; Striegel-Moore et al., 2001), it is likely that men with BED would benefit from additional treatment that directly targets weight loss strategies.

Interestingly, the treatment did not seem to produce a noticeable change in emotional eating in response to depression. However, when the pre-treatment mean score

of the Depression subscale of the EES is compared to the others, it can be seen that the score is considerably lower than those of Anger and Anxiety subscales. It is possible that no change was observed because the mean score for the Depression subscale was so low it was subject to a floor effect.

The outcomes of this study must be considered carefully, and due consideration needs to be given to the fact that no control group was used. Therefore, it is impossible to determine how much of the change is attributable to effects of the treatment, and how much may have occurred over time without treatment. Future studies need to include not only a large number of participants in the treatment group, but also a control group with which to compare them.

Overall, the response to the treatment programme recorded in the PEQ was positive, and the satisfaction ratings were moderate to high. In regards to enjoyable aspects of the programme, the men reported that group participation, having an outline handout of each session to take home, and the content of the programme (which helped one man to understand the impact his emotions was having on his eating habits), were enjoyable. One man reported that it was enjoyable to have a grasp on the various causes of his binges, and another reported that he found successfully ceasing binge eating as enjoyable. The men reported some aspects of the programme to be not enjoyable, including the speed of the presentations (which was reported to be too fast at times), and the length of the sessions (which were reported to be too long).

As was the case with the reports of many of the women, two of the three men responded with positive comments regarding the therapist. Again, this reflects the results of the Swain-Campbell and associates investigation (2001), and suggests that a positive therapeutic alliance between the therapist and participants is an important element in consumers' acceptance of treatment.

In response to questions regarding helpful parts of the programme, two of the three men reported that emotion recognition training was most helpful. Self-monitoring, basic nutrition, relaxation training, and problem solving, were also noted as being helpful. Participants did not describe any components as being unhelpful, although all three made suggestions for improvement, including incorporating one-on-one sessions, increasing contact during the first part of the programme, peer support during the programme, and

lengthening the treatment for those who need further help. A suggestion that changing the format of the self-monitoring form, which one man found confusing, was also made.

Being accountable to, and support from the investigator, weekly contact, homework assignments, and self-monitoring, were mentioned as ways in which the programme helped the men to feel more positively about their eating generally and binge eating specifically. The men felt generally positive at the end of the programme. They reported increased sense of control over eating, and “good” and “happy” about the newly integrated eating patterns, as reasons for this. One man described being able to make changes that he thought were not possible as a reason for his feeling positive after ending treatment. Nevertheless, as the men were aware that the therapist would be reading their responses and was familiar with their hand-writing, it is possible that their responses were influenced by this. Thus, the results of the PEQ must be taken with this possible bias taken into consideration.

In sum, it appeared that the men responded positively to the intervention on some symptoms (including binge eating, emotional eating in response to anger and anxiety, weight concerns, and alexithymia), but other symptoms were more resistant (including eating and shape concerns, and emotional eating in response to depression). Treatment effects that were gained appeared to be sufficiently maintained up to six months following treatment end, but many were lost after six months to one year after the intervention and weekly meetings with the therapist ceased. If the outcome of the current study is accurate, it appears that men with BED may benefit from additional sessions that address nutrition to enhance eating concerns and improve eating restraint, from treatment that has a greater emphasis on emotional recognition and management skills than does the one employed in this study, and from additional sessions that aim to aid weight loss and address shape concerns. Further, the results of the current study also suggest that men with BED may benefit from “booster” sessions that serve to remind participants of the skills they have learnt and when to employ them, and to address additional concerns that have manifested after treatment ended.

Due to the low number of participants, the lack of a control group, and the fact that random assignment was not possible, the only way of testing whether this treatment programme is useful for treating BED in men is to replicate the study with a larger

number of men, and with a control group of men who do not receive treatment. At this stage, it cannot be established how much of the changes observed in this study were attributable to the treatment, and how much must be done to change the current treatment in order to produce more lasting effects in the long-term. The considerable fluctuations observed across follow-up assessments may be an artefact of normal fluctuations in BED in men.

Notably, recruiting large numbers of men to participate in a treatment programme for BED is difficult. This is despite the apparently high numbers of men with BED relative to women in the general community (based on studies performed outside of New Zealand (NZ)). Advertising for men for this study was as diverse and extensive as for the women in Study One. Yet, whereas over 100 women responded for Study One, and 23 women completed the treatment, only six men responded to advertising, and three completed treatment in the current study.

Several investigations have documented that men with BED are almost as common as women (e.g., Arnow, 1999). It may not be that there are low numbers of men with BED relative to women in Christchurch, New Zealand, that explains the small number of male respondents, other factors may explain the phenomenon better. A ‘just get on with it’ mentality that exists in men in NZ and other countries, may prevent them from seeking treatment, particularly for a disorder that is commonly considered a “women’s disorder” in the general population (Weltzin et al., 2005). One NZ study documented a less positive attitude towards seeking psychological help in men than in women (Surgenor, 1985), which could also explain the lack of male response for the current study. Until the attitude of NZ men towards psychological help changes, it is likely to continue to be difficult to treat men with BED in NZ. Another possibility is that men may wait until their eating problem becomes more severe before seeking treatment compared to women. Also, whereas women may be more acutely aware of their eating habits and problems, particularly with respect to the effect on their shape and weight, men may not notice the effect until it is considerable. With the increase in males’ awareness of their physicality that appears to be occurring in response to an increase in pressure for men to be more muscular, the presence of eating problems may become more apparent in men.

## **CHAPTER SEVEN:**

### **Study Four;**

#### *Comparison of Treatment Response in Women and Men*

Although there are myriad empirical investigations evaluating the response of women with BED to various interventions, none have exclusively studied the response of men with BED to treatment. Further, the tendency to evaluate men and women as a group has prevented researchers and clinicians from determining whether women and men with BED respond differently. Little is actually known about BED in men, despite the fact that many of those with BED are men (Arnow, 1999; Becker et al., 1999). As such, it may be of little value treating men with the same treatment interventions that have been demonstrated to be effective in treating BED in women.

Whereas women with BED responded very positively to the intervention programme used in Study One, the response of men with BED in Study Three was more variable. The purpose of the current study was twofold: to compare women and men before treatment, and to compare the response of the women and men to the intervention.

### **Method**

#### *Procedure*

Data from the women who participated in Study One and from the men who participated in Study Three were compared at each assessment (baseline, pre-treatment, post-treatment, 3-, 6-, and 12-months follow-up). First, diagnoses were compared, then scores on measures of eating and general pathology. Threshold BED was diagnosed in accordance with the proposed criteria in the DSM-IV-TR (APA, 2000). Subthreshold BED was diagnosed if all inclusion criteria were met except below threshold binge eating size and/or frequency.

### *Measurements*

Scores on the following measures were compared: the EDE, the EDE-Q, the EES, the BES, and the TAS. For psychometric properties of these measures, see Method Study One.

### *Statistical Analyses*

Firstly, descriptions of the demographics, and then the differences between women and men in diagnostic status, were given. Due to the low number of participants in the men sample, statistical analyses comparing women and men could not be run. Thus, patterns of effect sizes (partial eta squared) were examined.

## **Results**

The number of participants used to assess whether there were differences between the women and men differed between the groups, and differed depending on the time point. For the women, the total women sample for Study One were included, although this varied when one participant dropped out at 6-months follow-up ( $n = 23$  for pre- and post-treatment, and 3-months follow-up;  $n = 22$  for 6- and 12-months follow-up). For the men, the three participants from Study Three were included.

### *Demographics*

Demographic characteristics, shown in Table 22, showed that the women and men were similar on ethnicity, and education level. The men appeared to be older than the women on average.

Table 22

*Age, Ethnicity, and Education Level of the Female Group and the Male Group*

	Women <sup>a</sup>	Men <sup>b</sup>
Age		
Mean	37.57 (SD = 7.71)	40.33 (SD = 7.24)
Ethnicity		
NZ European	20	2
NZ Maori	1	0
Other	1	1
Education Level		
High School (or less)	11	0
University-graduate	12	3

<sup>a</sup>  $n = 23$     <sup>b</sup>  $n = 3$ *Diagnostic Status, Eating and General Associated Pathology*

*Diagnostic Status.* At pre-treatment, 83% of the women met the criteria for subthreshold, and 17% met the criteria for threshold BED. Of the men, 100% met the criteria for subthreshold BED. These figures indicate that as a whole, the women displayed more severe eating disorder symptoms than did the men.

At post-treatment, 74% of the women did not meet the criteria for an eating disorder, 26% met the criteria for subthreshold BED, and none met the criteria for threshold BED. Of the men, 33% did not meet the criteria for an eating disorder, while 66% continued to meet the criteria for subthreshold BED.

These results indicate that the treatment may have been more effective for the women. Whereas the women as a whole started off more severe in their eating pathology than did the men (as evidenced by a greater number of women meeting the criteria of threshold BED than men), a greater percentage of women responded to the treatment and experienced a considerable reduction in eating pathology.

At 3-months follow-up, 83% of the women did not meet the criteria for an eating disorder, 8.5% met the criteria for subthreshold and 8.5% met the criteria for threshold BED. Of the men, 100% met the criteria for subthreshold BED. Thus, whereas the



improvements that were made were well-maintained in the women, they were not maintained for the men.

At 6-months follow-up, 91% of the women did not meet the criteria for an eating disorder, and 9% met the criteria for subthreshold BED and none met the criteria for threshold BED. Of the men, 33% did not meet the criteria for an eating disorder, while 66% continued to meet the criteria for subthreshold BED, and none met the criteria for full threshold BED. These results indicate that both women and men had improved slightly from 3- to 6-months follow-up.

At 12-months follow-up, 91% of the women did not meet the criteria for an eating disorder, 9% met the criteria for subthreshold BED and none met the criteria for full threshold BED. Of the men, 66% did not meet the criteria for an eating disorder, whereas 33% met the criteria for subthreshold BED, and none met the criteria for full threshold BED. Therefore, both women and men had maintained their diagnostic status from 6- to 12-months follow-up.

*Eating and General Associated Pathology: Comparisons between women and men at each assessment time point.* The number of participants differed between the groups, and differed depending on the time point. For the women, only the WL participants were included in the baseline ( $n = 11$ ), and the total women sample for Study One were included in the remaining time points ( $n = 23$  for pre- and post-treatment, and 3-months follow-up;  $n = 22$  for 6- and 12-months follow-up). For the men, the three participants from Study Three were included.

The means and effect sizes were obtained for baseline, pre and post-treatment, and 3-, 6-, and 12-months follow-up (see Table 23), and assessment of the size of the effect size was based on Cohen (1977). The EDE-Q subscales, the BES, EES subscales and Total score, and the TAS were compared between the women and men for each time point. However, the TAS was not assessed at baseline for the women or the men.

The effect sizes (partial eta squared) showed medium and large discrepancies between the mean scores of the women and men at every time point. All of the mean scores were higher for the men, except for the Eating Concerns subscale of the EDE-Q at pre-treatment, which was higher for the women with a medium effect size. Overall, it

appears that the number of variables that separated the women and men increased over time. Thus, there were more variables at 12-months follow-up that showed a medium or large effect size between the women and men than there were at pre- and post-treatment.

At pre-treatment, a medium difference was found between the women and men on the Eating Concerns subscale (where the women were higher than the men), and on the Shape Concerns subscale of the EDE-Q, the Anger and Depression subscales of the EES, and the TAS (where the men were higher than the women on these variables).

At post-treatment, a medium difference was found between the women and men on the Eating and Shape Concerns subscale of the EDE-Q, the Anger and Depression subscales of the EES, and the TAS. Although the remaining variables were higher for the men, these discrepancies between the groups were found to be small.

At 3-months follow-up, a medium difference was found between the women and men on the Weight Concerns and Restraint subscales of the EDE-Q, the Depression subscale and Total score of the EES, and the TAS. A large discrepancy was found between the women and men on the Eating and Shape Concerns subscales of the EDE-Q.

At 6-months follow-up, a medium difference was found between the women and men on the Eating Concerns and Restraint subscales of the EDE-Q, the Anxiety and Depression subscales and Total score of the EES, and the TAS. A large discrepancy was found between the groups on the Shape Concerns subscale of the EDE-Q.

At 12-months follow-up, a medium difference was found between the groups on the BES, subscales and Total score of the EES, and the TAS. A large difference was found between the groups on the Shape Concerns subscale of the EDE-Q.

Table 23  
*Mean Scores, Standard Deviations, and Effect Sizes for Women and Men at Each Time Point.*

		Women	Men		
Time Point	Variable	M (S.D)	M (S.D)	ES	
Pre-Treatment	EDE-Q				
	Eating Concerns	0.99 (0.699)	0.87 (0.127)	0.127	
	Shape Concerns	2.34 (1.16)	3.40 (2.17)	0.071	
	Weight Concerns	2.00 (1.02)	2.33 (1.33)	0.006	
	Restraint	1.66 (1.42)	1.80 (1.22)	0.001	
	BES	11.91 (5.92)	14.00 (1.00)	0.015	
	EES				
	Anger Subscale	12.65 (7.56)	20.00 (1.73)	0.102	
	Anxiety Subscale	7.96 (6.13)	9.33 (5.51)	0.006	
	Depression Subscale	7.43 (3.93)	11.67 (1.53)	0.121	
	Total Score	28.04 (15.77)	36.33 (7.64)	0.032	
	TAS	40.48 (9.61)	48.35 (9.94)	0.061	
	Post-Treatment	EDE-Q			
		Eating Concerns	0.99 (0.70)	1.87 (1.27)	0.127
Shape Concerns		2.34 (1.16)	3.40 (2.17)	0.071	
Weight Concerns		2.10 (1.02)	2.33 (1.33)	0.006	
Restraint		1.66 (1.42)	1.80 (1.22)	0.001	
BES		11.91 (5.92)	14.00 (1.00)	0.015	
EES					
Anger Subscale		12.65 (7.56)	20.00 (1.73)	0.102	
Anxiety Subscale		7.96 (6.13)	9.33 (5.51)	0.006	
Depression Subscale		7.43 (3.93)	11.67 (1.53)	0.121	
Total Score		28.04 (15.77)	36.33 (7.64)	0.032	
TAS		40.48 (9.61)	48.00 (12.00)	0.061	
3-Months Follow-up		EDE-Q			
		Eating Concerns	0.62 (0.69)	2.33 (1.62)	0.331
	Shape Concerns	1.75 (1.18)	3.53 (2.35)	0.169	
	Weight Concerns	1.83 (1.04)	3.07 (1.90)	0.115	
	Restraint	1.23 (1.22)	2.53 (1.70)	0.104	
	BES	9.96 (7.79)	14.00 (7.00)	0.029	
	EES				
	Anger Subscale	9.61 (7.45)	13.00 (7.81)	0.022	
	Anxiety Subscale	6.39 (6.24)	11.00 (9.85)	0.051	
	Depression Subscale	6.74 (3.62)	11.33 (6.11)	0.134	
	Total Score	22.48 (15.16)	35.33 (23.12)	0.067	
	TAS	37.00 (8.67)	47.00 (11.79)	0.121	

Table 23 Continued...

*Mean Scores, Standard Deviations, and Effect Sizes for Women and Men at Each Time Point.*

## 6-Months Follow-up

EDE-Q			
Eating Concerns	0.64 (0.76)	1.47 (0.91)	0.117
Shape Concerns	1.71 (1.58)	2.73 (1.63)	0.460
Weight Concerns	1.72 (1.45)	2.40 (1.20)	0.025
Restraint	1.13 (1.06)	2.13 (1.14)	0.092
BES	9.41 (6.08)	13.33 (4.04)	0.048
EES			
Anger Subscale	8.95 (8.47)	12.67 (6.81)	0.022
Anxiety Subscale	5.55 (5.12)	11.00 (8.72)	0.100
Depression Subscale	5.86 (3.97)	10.33 (4.04)	0.127
Total Score	20.36 (16.67)	34.00 (18.33)	0.070
TAS	38.14 (11.81)	51.00 (12.77)	0.118

## 12-Months Follow-up

EDE-Q			
Eating Concerns	0.75 (1.14)	1.47 (0.31)	0.048
Shape Concerns	1.80 (1.18)	3.20 (1.13)	0.140
Weight Concerns	1.60 (1.16)	2.33 (0.12)	0.048
Restraint	1.15 (1.43)	1.73 (0.70)	0.020
BES	8.18 (16.63)	15.67 (5.51)	0.131
EES			
Anger Subscale	9.18 (8.49)	16.67 (1.53)	0.089
Anxiety Subscale	6.77 (5.49)	13.00 (5.57)	0.128
Depression Subscale	7.82 (4.95)	12.33 (2.89)	0.092
Total Score	23.77 (7.26)	42.00 (5.29)	0.122
TAS	36.55 (11.09)	49.00 (17.52)	0.109

## Discussion

Whereas the results of Study One indicated the women responded well to the treatment programme and that treatment effects seemed to be well maintained, Study Three indicated that the response to treatment in the men was more varied, and treatment effects were not maintained consistently. This study aimed to confirm whether women and men did respond differently to the treatment, and, if so, to what extent.

As there were few participants in the men group, significance testing was not performed and patterns of effect sizes were examined at each time point.

Effect sizes showed medium and large discrepancies between the mean scores of the women and men at every time point. Except for the Eating Concerns subscale of the EDE-Q at pre-treatment, all of the mean scores were higher for the men. This finding indicates that the men were generally more severe in their eating and related pathology than were the women before treatment, suggesting that men with BED may wait until their symptoms are more severe before seeking treatment than do women. Otherwise, it may reflect a general reluctance in men to seek treatment, as found Larsen and associates found (2006).

At post-treatment, the men were higher on all variables, including the Eating Concerns subscale of the EDE-Q. Medium differences were found between the women and men in the Eating and Shape Concerns subscales of the EDE-Q, the Anger and Depression subscales of the EES, and the TAS. The remaining differences between the groups were found to be small.

At follow-up assessments, the mean scores showed that the men were higher on all variables at each assessment. In general, it appears that the number of variables that separated the women and men increased over time, as did the size of the discrepancies between the groups. Thus, there were more variables at 12-months follow-up that showed a medium or large difference between the women and men than there were at pre- and post-treatment, and many of the differences changed from small to medium or large. This also reflects the results of Study Three, which showed that treatment effects were considerably reduced after 6-months follow-up in the men, indicating that “booster” sessions may be of benefit when treating men with BED. The outcome also suggests that men with BED may require more intensive treatments than do women with BED.

Interestingly, at all stages the men were more alexithymic than were the women, and at 12-months follow-up, the difference between the groups had increased such that the men were substantially more alexithymic than were the women. The men also appeared to be more affected by emotional eating than were the women before and after treatment, and up to one year later. Again, this reflects the outcome of Study Three, where the results of the current study indicate that treatment for men with BED may need to focus more on aspects related to emotional intelligence and emotional eating, with a

greater emphasis on maintenance of all treatment effects, than is needed for treating BED in women.

In sum, the treatment appeared to have worked well for the women, and treatment effects seemed to have been well-maintained. Comparatively, while the intervention seemed to have produced positive effects on binge eating severity, concerns about weight, emotional eating in response to anger and anxiety, and alexithymia in men, the changes were not as pronounced as were those in women. Further, whereas the treatment effects appeared to be well maintained in the women, the results of Study Three and the current study indicate that the men's maintenance of treatment effects were more varied. Taken together, these results suggest that treatments for BED in men may need to have a greater emphasis on teaching emotional discrimination and management than those for women. Further, "booster" sessions may be required six months after treatment has ended for men, whereas women may not need these extra sessions.

Unfortunately, conclusions drawn from this investigation can be made only tentatively due to low participant numbers in the group of men. Further, as mentioned in Study Three, one of the men may have fitted the criteria for NES more accurately than BED, and this may have unduly influenced the results of the present study.

Nevertheless, the investigation provides an interesting insight into possible similarities and differences in response to treatment for women and men with BED. As men with BED are almost as prevalent as women (e.g., Arnow, 1999; Becker et al., 1999), future studies with larger sample sizes (particularly of men) are needed to ensure that men receive treatment that is best suited to their specific needs. Once such studies have been performed, and if it is still indicated that treatments for men with BED need to have more sessions dedicated to building emotional recognition and tolerance skills to produce similar treatment effects to women with BED, it is suggested that future studies test the efficacy such interventions.

## **CHAPTER EIGHT:**

### **General Discussion**

#### **Treatment Evaluation**

The intervention used in Studies One to Four is a combined psychoeducation and group therapy programme. It integrates aspects from CBT for BED (including nutrition and meal planning guidance, self-monitoring, problem solving and treatment maintenance), assertion training from IPT, and some affect recognition concepts from DBT. Recognising a binge and relaxation training were also added. A large portion of the emotion discrimination training was developed by the author and Mr. Neville Blampied, where facial expression, behavioural and physiological responses to situations are used as cues for recognising affect.

#### *Women's Response to Treatment*

The first aim of Study One was to test whether teaching emotional discrimination and management skills to women with BED is efficacious in improving binge eating and related pathologies. The investigation was a replication of Clyne and Blampied (2004), but with several improvements, including; a larger number of participants, the use of a clinical interview instead of self-report measures to diagnose BED, the inclusion of a control group, and a longer follow-up period.

The outcome of the study indicated that the intervention successfully reduced bingeing and other symptoms in women with subthreshold and threshold BED. High abstinence rates comparable to those found for CBT, IPT, and DBT, and large improvements in eating and related pathology, were revealed at post-treatment. Treatment gains appeared to be well-maintained up to one year after treatment ended, where binge abstinence was preserved, and other improvements either did not change, or continued to improve across follow-up assessments.

Using an intent-to-treat analysis, very few changes to the outcome using treatment completers' data were observed, indicating that the outcome was not biased by factors unique to those who completed the treatment and follow-up assessments.

The only variable that did not evidence a large change from pre- to post-intervention was eating restraint. There are several possible explanations for this, including: the treatment did not successfully produce improvement in eating restraint; the Restraint subscale of the EDE-Q is not a valid measure of eating restraint; and that there is a continuum of eating restraint ranging from no restriction, to flexible restriction, to rigid restriction (for an explanation on the definition of rigid and flexible restriction, see Westernhoefer et al., 1999). It is possible that the type of dietary restraint employed by the women changed from pathological to normal, and definitions of the term "restraint" changed accordingly, but scores on the Restraint subscale of the EDE-Q remained constant.

Finally, the outcome of Study One suggests that PET is an effective modality for treating women with subthreshold and threshold BED in a group setting.

*Analysis of the Treatment.* The first aim of Study Two was to evaluate the specific aspects of the treatment package that were most helpful or effective in producing change in the women, and a session-by-session analysis was employed. Trend analyses showed that while some variables changed gradually, as indicated by a significantly linear trend, while others did not. A gradual change was observed in eating, shape and weight concerns, and in emotional eating in response to anxiety and depression. These results indicate that the treatment as a whole may be required to produce large and lasting improvements in these variables.

However, several variables were not shown to be significantly linear, including emotional eating in response to anger, eating restraint, alexithymia, depression, anxiety and stress, and also perceived stress. Of these, emotional eating in response to anger was the only variable that was significantly quadratic. The means for this variable were shown to increase to above pre-treatment levels after treatment began, before reducing below pre-treatment levels at post-treatment. The reasons for this increase after treatment began are unclear, and may be due to the treatment itself, or factors outside the treatment. As



the changes in restraint, alexithymia, depression, anxiety, stress and perceived stress did not reach significance, it is unclear whether these variables would have produced significantly linear trends. Because the changes observed in these variables were accompanied by medium effect sizes, it appears likely that there were insufficient participants to produce statistically significant results, rather than insufficient changes in the variables.

The second aim of Study Two was to determine the consumers' assessment of the acceptability of the treatment. Overall, a measure evaluating the women's response to treatment indicated that consumer satisfaction was high. The closed- and open-ended questions regarding these factors showed that all components of the programme were endorsed by several women as enjoyable and useful, and none were found to be not helpful. Variation as to which components of the treatment were found to be useful further supports the need to either employ the treatment package as a whole, or to carefully assess the needs of the individual at each stage of intervention. Overall, the women felt very positive about their binge eating and related symptoms after treatment ended.

Noticeably, positive responses to open-ended questions outnumbered negative comments, reflecting the results of a recent NZ investigation (Swain-Campbell et al., 2001). Many of the positive comments were regarding the therapist, also reflecting the outcome of the Swain-Campbell and colleagues (2001) study. This illustrates that a strong therapeutic alliance may be an important feature of treatment acceptability.

Several suggestions were made regarding improvements for the treatment programme, including additional nutritional training, increasing the length of the programme, increasing the length of sessions, phone support at the beginning of treatment, one-on-one sessions, and less reading from overheads during the psychoeducational parts of the programme. These suggestions were in contrast to other women who found the length of the sessions and programme as a whole to be optimal, and in contrast to those women who found the presentation to be suited to their needs. Thus, the treatment package may not be enjoyable all women with BED.

### *Men's Response to Treatment*

As little is known about the response of men with BED to treatment, Study Three was a pilot study that attempted to investigate the responses of men with subthreshold and threshold BED to the treatment used in Study One.

Diagnostic status, self-monitored binge eating, and effect sizes were used to detect change. From pre- to post-intervention, 66% (two of three) had improved their diagnostic status from subthreshold or threshold BED to no diagnosis, but binge amount and frequency fluctuated from the beginning to the end of treatment. Large, positive treatment effects were revealed for measures of binge eating, eating in response to anger and anxiety, and weight concerns from pre- to post-treatment. Further, a medium, positive change was observed in alexithymia. Only small changes were made for eating and shape concerns, restraint, and emotional eating in response to depression.

Interestingly, while binge eating had improved to a large degree, concerns about eating had not. Several reasons for this include: binge eating change was not associated with the development of confidence regarding the maintenance of these changes; behavioural binge eating improvement had not been accompanied by changes in perceptions of eating; or binge eating improvements had not resulted in a positive change in shape, resulting in concern over eating, and its influence over shape, not being affected.

Notably, effect sizes and mean scores indicated that men were more alexithymic than women at pre- and post-treatment, and across all follow-ups, and that the discrepancy between the groups increased over time.

Overall, the men responded positively towards the programme, and satisfaction ratings were moderate to high. The men reported that group participation, having an outline handout of each session to take home, and the content of the programme (which helped one man to understand the impact his emotions was having on his eating habits), were enjoyable. Acquiring a grasp on the various causes of binges, and successful cessation of binge eating, were also cited as enjoyable. The speed of the presentations was reported to be too fast at times, and the length of the sessions, which were reported to be too long, were not found to be enjoyable. Two of the three men reported that emotion

recognition training was most helpful. Self-monitoring, basic nutrition, relaxation training, and problem solving, were also noted as helpful, and no components were found to be not helpful. The men reported feeling more positively about their eating generally and binge eating specifically, and cited being accountable to, and support from, the investigator, weekly contact, homework assignments, and self-monitoring, as reasons for this change. Reports of increased self of control over eating, and “good” and “happy” about the newly integrated eating patterns were cited as contributing to the men feeling more positive after treatment. One man described being able to make changes that he thought were not possible as a reason for his feeling positive at the end of treatment.

Several suggestions were made for improvements to the programme, including incorporating one-on-one sessions, increased contact during the first part of the programme, peer support during the programme, and lengthening the treatment for those who need further help. A suggestion that changing the format of the self-monitoring form, which one man found confusing, was also made.

Two of the three men responded with positive comments regarding the therapist, reflecting the findings of Study Two and the findings of the Swain-Campbell and associates investigation (2001). This further illustrates the importance of the therapeutic alliance between the therapist and participants.

It appears from this study that treatments for men with BED may require a greater emphasis on teaching emotional recognition and management skills than do those for women. They may also require “booster” sessions after six months following treatment end, to remind treatment completers of the skills they learnt, thereby increasing treatment maintenance.

### *Women Compared to Men – Response to Treatment*

Whereas the outcome of Study One indicated that the treatment programme was efficacious in producing large and lasting improvements in eating and related pathology in women, Studies Three and Four showed that the men did not respond as positively. As there were insufficient participant numbers in the male group, effect sizes were used to determine the amount of discrepancy between the groups. At pre-treatment, men were

higher on every measured variable except eating concerns, indicating that men may wait longer before seeking treatment (Weltzin et al., 2005). At post-treatment, the men were higher on every measured variable, including eating concerns, and the differences ranged from small to large. As follow-up sessions progressed, the number of variables that separated the groups by a medium or large effect size increased. Again, this may indicate that men with BED require “booster” sessions after six months following treatment end. As men were always higher on alexithymia and appeared to be more affected by emotional eating, it appears that men may require more intensive treatments that place a greater emphasis on teaching emotional recognition and management than do women with BED.

Overall, Study Four showed that treatment effects for men were not as pronounced or well-maintained as they appeared to be for the women.

### **Evidence for the Affect Regulation Model**

The Affect Regulation Model assumes that binge eating is precipitated by negative affect and an inability to cope effectively with emotional upset (e.g., Wiser & Telch, 1999). Collectively, anecdotal evidence observed in the investigations with women and men provide support for the Affect Regulation Model of BED. In Study One and Three, a reduction in binge eating was linked to a reduction in scores on measures of emotional eating. Further, the women and men often reported that negative affect such as sadness, boredom, frustration, anxiousness, and feeling upset preceded binge eating.

### **Subthreshold and Threshold BED – Implications for Diagnostic Criteria**

Empirical evidence suggests that the frequency of binges per week (Hsu et al., 2002), and amount of food consumed during a binge (e.g., Kerzhnerman & Lowe, 2002), may not be relevant criteria for diagnosing BED. As frequency and amount criteria are used to discriminate severity of BED, it would be expected that subthreshold and

threshold BED would differ on measures of eating and related pathology. Yet, many studies comparing the two groups have revealed little difference on levels of eating (e.g., Striegel-Moore et al., 1998; 2000) and general distress (e.g., Martin et al., 2002). Research (e.g., Johnson et al., 2000; 2003; Telch et al., 1998) has shown that loss of control, a criterion that differentiates binge eating from overeating, may be more useful for diagnosing binge eating than size or frequency of episodes. This study also showed little difference between subthreshold and threshold BED on measures of binge eating severity, eating restraint, eating, weight and shape concerns, alexithymia, and emotional eating at pre-treatment. No differences were found between the groups at post-treatment and across follow-up assessments, indicating that subthreshold and threshold BED respond similarly to the treatment intervention, and maintained treatment gains to a similar extent. The results also indicated that the subthreshold group responded well to treatment, suggesting that those with subthreshold BED may benefit from intervention for binge eating and related symptoms, despite not meeting size and frequency diagnostic criterion.

### **Limitations, Suggestions for Improvements, and Future Directions**

The outcome of studies One to Four were limited by the low number of participants, thus replications with larger number of women and men are warranted. A larger number of male participants would also allow future research to include a control group with which to compare treatment groups, which was not possible in Study Three.

Future studies comparing women and men with BED on measures of distress prior to treatment are needed to determine whether men with BED indeed have more severe levels of pathology (particularly alexithymia and emotional eating). A study to determine whether men with BED do in fact wait longer before presenting for treatment, or whether BED develops in men after they are exposed to a greater number of risk factors than women (for instance, higher depression or anxiety), would be useful for selecting treatment components for men with BED. Additionally, if further research reveals that men do indeed respond less to the current intervention programme, it is

suggested that future research test the efficacy of the same treatment with additional sessions that teach emotional recognition, that address shape concerns, that increase participants' self-efficacy in maintaining treatment gains, and that include "booster" sessions at six months to increase the maintenance of treatment gains.

Future research testing the efficacy of teaching emotional discrimination and management to those with BED should employ independent assessors to diagnose participants. They should also use more than one therapist to reduce therapist bias, and treatment faithfulness should be tested and ensured. In addition, studies testing the efficacy of the current treatment programme would do well to test the effect of individual treatment components independent of others. This would allow researchers and clinicians to test the impact of each treatment component, and to create a treatment package that includes only treatment components that produce benefit.

To test the influence of differing types of restraint on binge eating (rigid, flexible, and no restriction), a large study that assesses the link between the three types of restraint and severity of binge eating is desirable. It would also be useful to test the influence of negative affect over and above restraint to determine whether flexible restraint is protective against binge eating, except in the presence of negative affect. This would allow clinicians' to recognise when their clients need help with normalising eating patterns, moderating response to negative affect, or both.

To determine the effect of the treatment on participants' weight, it is recommended that future studies directly measure participants' weight, rather than relying on self-report. In order to preclude biases that may result from participant group assignment, it is suggested that future research randomly assign participants. Further, there was such a high drop-out rate in the wait-list group, which may have resulted from having to self-monitor binge episodes over an extended period of time. Thus, future researchers should request that participants self-monitor in the two weeks before treatment rather than in the months leading up to it.

Replications with a larger number of threshold BED in studies comparing those with subthreshold and threshold BED are also needed, particularly with respect to determining the validity of the size and frequency criteria in diagnostic specifications.

Investigations should specifically evaluate the relative clinical utility of the current diagnostic criteria for defining binge eating and the utility of the proposed loss of control criterion. Previous investigations, and the current research, suggest that those fitting the diagnostic criteria for subthreshold BED are equally distressed as those who are diagnosed with threshold BED (e.g., Martin et al., 2002; Striegel-Moore et al., 1998; 2000). It is essential, particularly with respect to access to treatment, that diagnostic criteria can accurately identify sufferers of BED.

Lastly, these investigations were group-based treatment studies. Treating individuals in groups can have the benefit of participants positively influencing each other due to shared experiences, but this may also create statistical issues due to the violation of the independence of observations assumption (Baldwin et al., 2005). As the outcome of such studies may be influenced by non-independence of observations, it is important that the outcomes be considered in light of this.

## REFERENCES

- Abraham, S.F., & Beumont, P.J. (1982). How patients describe bulimia or binge eating. *Psychological Medicine*, 12, 625-635.
- Adami, G.F., Meneghelli, A., & Scopinaro, N. (1999). Night eating and binge eating disorder in obese patients. *International Journal of Eating Disorders*, 25, 335-338.
- Agras, W.S. (1995). Treatment of the obese binge eater. In K. Brownell & C. G. Fairburn (Eds.), *Eating disorders and obesity: A comprehensive handbook*. New York: Guilford Press.
- Agras, W.S., Telch, C.F., Arnow, B., Eldredge, K., Detzer, M.J., Henderson, J., & Marnell, M. (1995). Does interpersonal therapy help patients with binge eating disorder who fail to respond to cognitive-behavioral therapy? *Journal of Consulting and Clinical Psychology*, 63, 356-360.
- Agras, W.S., Telch, C.F., Arnow, B., Eldredge, K., & Marnell, M. (1997). One-year follow-up of cognitive-behavioral therapy for obese individuals with binge eating disorder. *Journal of Consulting and Clinical Psychology*, 65, 343-347.
- Allison, K.C., Grilo, C.M., Masheb, R.M., & Stunkard, A.J. (2005). Binge eating disorder and night eating syndrome: A comparative study of disordered eating. *Journal of Consulting and Clinical Psychology*, 73, 1107-1115.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders*. (3rd ed., text rev). Washington, DC: Author.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*. (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*. (4th ed., text rev.). Washington, DC: Author.
- Anderson, D.A., Williamson, D.A., Johnson, W.G., & Grieve, C.O. (2001). Validity of test meals for determining binge eating. *Eating Behaviors*, 2, 105-112.
- Arnow, B.A. (1999). Introduction. *Journal of Clinical Psychology*, 55, 669-674.
- Arnow, B.A., Kenardy, J., & Agras, W.S. (1992). Binge eating among the obese: A descriptive study. *Journal of Behavioral Medicine*, 15, 155-170.
- Arnow, B., Kenardy, J., & Agras, W. (1995). The Emotional Eating Scale: The



- development of a measure to assist coping with negative affect by eating. *International Journal of Eating Disorders*, 18, 79-90.
- Attie, I., & Brookes-Gunn, J. (1989). Development of eating problems in adolescent girls: A longitudinal study. *Developmental Psychology*, 25, 70-79.
- Bagby, R.M., Parker, J.D. , Taylor, G.J. (1994). The twenty-item Toronto Alexithymia Scale – I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, 38, 23-32.
- Bagby, R.M., Taylor, G.J., Parker, J.D. (1994). The twenty-item Toronto Alexithymia Scale – II. Convergent, discriminant, and concurrent validity. *Journal of Psychosomatic Research*, 38, 33-40.
- Baldwin, S.A., Murray, D.M., & Shadish, W.R. (2005). Empirically supported treatments or type I error? Problems with the analysis of data from group-administered treatments. *Journal of Consulting and Clinical Psychology*, 73(5), 924-935.
- Barry, D.T., Grilo, C.M., & Masheb, R.M. (2002). Gender differences in patients with binge eating disorder. *International Journal of Eating Disorders*, 31, 63-70.
- Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.
- Becker, A., Grinspoon, S., Klibanski, A., & Herzog, D. (1999). Current concepts: Eating disorders. *The New England Journal of Medicine*, 340, 1092-1098.
- Birchall, H. (1999). Interpersonal psychotherapy in the treatment of eating disorders: Viewpoint. *European Eating Disorders Review*, 7, 315-320.
- Bourke, M.P., Taylor, G.J., Parker, J.D., & Bagby, R.M. (1992). Alexithymia in women with anorexia nervosa: A preliminary investigation. *British Journal of Psychiatry*, 161, 240-243.
- Brody, M.L., Walsh, T., Devlin, M.J. (1994). Binge eating disorder; reliability and validity a new diagnostic category. *Journal of Consulting and Clinical Psychology*, 62, 381-386.
- Brownell, K.D. (1989). *The LEARN program for weight control*. Dallas, TX: Brownell & Hager.
- Bulik, C.M., Sullivan, P.F., & Kendler, K.S. (2000). An empirical study of the classification of eating disorders. *American Journal of Psychiatry*, 157, 886-895.

- Cachelin, F.M., Striegel-Moore, R.H., Elder, K.A., Pike, K.M., Wilfley, D.E., & Fairburn, C.G. (1999). Natural course of a community sample of women with binge eating disorder. *International Journal of Eating Disorders*, 25, 45-54.
- Cameron, L., & Nicholls, G. (1998). Expression of stressful experiences through writing: Effects of a self-regulation manipulation for pessimists and optimists. *Health Psychology*, 17, 84-92.
- Carter, J.C., & Fairburn, C.G. (1998). Cognitive-behavioral self-help for binge eating disorder: A controlled effectiveness study. *Journal of Consulting and Clinical Psychology*, 66, 616-623.
- Carver, C., Scheiver, M., & Weintraub, J. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267-283.
- Castonguay, L., Eldredge, K., & Agras, W. (1995). Binge eating disorder: Current state and future directions. *Clinical Psychology Review*, 15, 865-890.
- Ciano, R., Rocco, P.L., Angarano, A., Biasin, E., & Balestrieri, M. (2002). Group-analytic and psychoeducational therapies for binge-eating disorder: An exploratory study on efficacy and persistence of effects. *Psychotherapy Research*, 12, 231-239.
- Clyne, C., & Blampied, N.M. (2004). Training in emotion regulation as a treatment for binge eating: A preliminary study. *Behaviour Change*, 21, 269-281.
- Cochrane, C.E., Brewerton, T.D., Wilson, D.B., & Hodge, E.L. (1993). Alexithymia and the eating disorders. *International Journal of Eating Disorders*, 14, 219-222.
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385-396.
- Cooper, M.J., Clark, D.M., Fairburn, C.G. (1993). An experimental study of the relationship between thought and eating behaviour in bulimia nervosa. *Behaviour Research and Therapy*, 31, 749-757.
- Cooper, Z., & Fairburn, C.G. (1987). The Eating Disorders Examination: A semistructured interview for the assessment of the specific psychopathology of eating disorders. *International Journal of Eating Disorders*, 6, 1-8.

- Costanzo, P.R., Musante, G.J., Friedman, K.E., Kern, L.S., & Tomlinson, K. (1999). The gender specificity of emotional, situational, and behavioral indicators of binge eating in a diet-seeking obese population. *International Journal of Eating Disorders*, 26, 205-210.
- Crow, S.J., Agras, W.S., Halmi, K., Mitchell, J.E., & Kraemer, H.C. (2002). Full syndromal versus subthreshold anorexia nervosa, bulimia nervosa, and binge eating disorder: A multisite study. *International Journal of Eating Disorders*, 32, 309-318.
- Crowther, J., Sanftner, J., Bonifazi, D., & Shepherd, K. (2001). The role of daily hassles in binge eating. *International Journal of Eating Disorders*, 29, 449-454.
- Davis, R., McVey, G., Heinmaa, M., Rockert, W., & Kennedy, S. (1999). Sequencing of cognitive-behavioral treatments for bulimia nervosa. *International Journal of Eating Disorders*, 25, 361-374.
- Davis, R., Olmsted, M.P., & Rockert, W. (1990). Brief group psychoeducation for bulimia nervosa: Assessing the clinical significance of change. *Journal of Consulting and Clinical Psychology*, 58, 882-885.
- Davison, G.C., & Neale, J.M. (1998). *Abnormal psychology*. New York: John Wiley & Sons, Inc.
- Deaver, C.M., Miltenberger, R.G., Smyth, J., Meidinger, A., & Crosby, R. (2003). An evaluation of affect and binge eating. *Behavior Modification*, 27, 578-599.
- Devlin, M.J., Goldfein, J.A., Dobrow, I. (2003). What is this thing called BED? Current status of binge eating disorder nosology. *International Journal of Eating Disorders*, 34, S2-S18.
- deZwann, M. (2001). Binge eating disorder and obesity. *International Journal of Obesity and Related Metabolic Disorders*, 25, S51-S55.
- deZwann, M., Bach, M., Mitchell, J.E., Ackard, D., Specker, S.M., Pyle, R.L., & Pakesch, G. (1995). Alexithymia, obesity, and binge eating disorder. *International Journal of Eating Disorders*, 17, 135-140.
- deZwann, M., Burgard, M.A., Schenck, C.H., Mitchell, J.E. (2003). Night time eating: A review of the literature. *European Eating Disorders Review*, 11, 7-24.
- deZwann, M., Mitchell, J.E., Seim, H.C., Specker, S.M., Pyle, R., Raymond, N., & Crosby, R. (1994). Eating related and general psychopathology in obese females with

- binge eating disorder. *International Journal of Eating Disorders*, 15, 43-52.
- deZwann, M., Nutzinger, D.O., & Schoenbeck, G. (1993). Binge eating in overweight women. *Comprehensive Psychiatry*, 33, 256-261
- Diabetes Organisation (2003, July). *Risk factors for stroke and heart attack: A brochure*. Retrieved September 30, 2004, from <http://www.diabetes.org.nz>.
- Didie, E.R., & Fitzgibbon, M. (2005). Binge eating and psychological distress: Is the degree of obesity a factor? *Eating Behaviors*, 6, 35-41.
- Dritschel, B., Cooper, P.J., & Charnock, D. (1993). A problematic counterregulation experiment: Implications for the link between dietary restraint and eating. *International Journal of Eating Disorders*, 3, 297-304.
- Eldredge, K.L., & Agras, W.S. (1996). Weight and shape overconcern and emotional eating in binge eating disorder. *International Journal of Eating Disorder*, 19, 73-82.
- Eldredge, K.L., Agras, W.S., Arnow, B., Telch, C.F., Bell, S., Castonguay, L., & Marnell, M. (1997). The effects of extending cognitive-behavioral therapy for binge eating disorder among initial treatment nonresponders. *International Journal of Eating Disorders*, 21, 347-352.
- Eldredge, K.L., Locke, K.D., & Horowitz, L.M. (1998). Patterns of interpersonal problems associated with binge eating disorder. *International Journal of Eating Disorders*, 23, 383-389.
- Fairburn, C.G. (1995). *Overcoming binge eating*. New York: Guilford Press.
- Fairburn, C.G., & Beglin, S. (1994). Assessment of eating disorders: Interview or self-report questionnaire? *International Journal of Eating Disorders*, 16, 363-370.
- Fairburn, C.G., & Carter, J.C. (1996). Self-help and guided self-help for binge-eating problems. In D. M. Garner & P. E. Garfinkel (Eds.), *Handbook of treatment for eating disorders* (2<sup>nd</sup> ed.). (pp. 494-499). New York: Guilford Press.
- Fairburn, C.G., & Cooper, Z. (1993). The Eating Disorder Examination (12<sup>th</sup> ed.). In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment*. New York: Guilford Press.
- Fairburn, C.G., Cooper, Z., Doll, H.A., Norman, P., O'Connor, M. (2000). The natural course of bulimia nervosa and binge eating disorder in young women. *Archives of General Psychiatry*, 57(7), 659-665.

- Fairburn, C.G., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: A “transdiagnostic” theory and treatment. *Behaviour Research and Therapy*, 41, 509-528.
- Fairburn, C.G., Jones, R., Peveler, R.C., Carr, S.J., Solomon, R.A., O’Connor, M.E., Burton, J., & Hope, R.A. (1991). Three psychological treatments for bulimia nervosa. *Archives of General Psychiatry*, 48, 463-469.
- Fairburn, C.G., Marcus, M.D., & Wilson, L.T. (1993). Cognitive behavior therapy for binge eating and bulimia nervosa: A comprehensive treatment manual. In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment*. New York: Guilford.
- Flick, S.N. (1988). Managing attrition in clinical research. *Clinical Psychology Review*, 8, 499-515.
- Freeman, C.P.L., Barry, R., Dunkeld-Turnbull, J., & Henderson, A. (1988). Controlled trial of psychotherapy for bulimia nervosa. *British Medical Journal*, 296, 521-525.
- Garner, D.M., Olmstead, M.P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders*, 2, 15-34.
- Geliebter, A. (2002). New developments in binge eating disorder and the night eating syndrome. *Appetite*, 39, 175-177.
- Ghaderi, A., & Scott, B. (2003). Pure and guided self-help for full and subthreshold bulimia nervosa and binge eating disorder. *British Journal of Clinical Psychology*, 42, 257-269.
- Gladis, M., Wadden, T., Foster, G., Vogt, R., & Wingate, B. (1998). A comparison of two approaches to the assessment of binge eating in obesity. *International Journal of Eating Disorders*, 23, 17-26.
- Goldman, S.L., Kraemer, D.T., & Salovey, P. (1996). Beliefs about mood moderate the relationship of stress to illness and symptom reporting. *Journal of Psychosomatic Research*, 41, 115-128.
- Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. New York: Bantam Books.
- Goodrick, G.K., Poston, W.S.C., Kimball, K.T., Reeves, R.S., & Foreyt, J.P. (1998).

- Nondieting versus dieting treatment for overweight binge-eating women. *Journal of Consulting and Clinical Psychology*, 66, 363-368.
- Gormally, J., Black, S., Daston, S., & Rardin, D. (1982). The assessment of binge-eating severity among obese persons. *Addictive Behaviors*, 7, 47-55.
- Grilo, C.M., & Masheb, R.M. (2004). Night-time eating in men and women with binge eating disorder. *Behaviour Research and Therapy*, 42, 397-407.
- Grilo, C.M., Masheb, R.M., & Salant, S.L. (2005). Cognitive behavior therapy guided self-help and Orlistat for treatment of binge eating disorder: A randomized, double-blind, placebo-controlled trial. *Biological Psychiatry*, 57, 1193-1201.
- Grilo, C.M., Masheb, R.M., & Wilson, G.T. (2001). A comparison of different methods for assessing the features of eating disorders in patients with binge eating disorder. *Journal of Consulting and Clinical Psychology*, 69, 317-322.
- Gross, J.J. (1999). Emotion regulation: Past, present, future. *Cognition and Emotion*, 13, 551-573.
- Hagan, M.M., Shuman, E.S., Oswald, K.D., Corcoran, K.J., Profitt, J.H., Blackburn, K., Schwiebert, M.W., Chandler, P.C., & Birbaum, C. (2002). Incidence of chaotic eating behaviors in binge-eating disorder: Contributing factors. *Behavioral Medicine*, 28, 99-105.
- Hay, P. (1998). The epidemiology of eating disorder behaviors: An Australian community-based survey. *International Journal of Eating Disorders*, 23, 371-382.
- Hay, P., & Fairburn, C.C. (1998). The validity of the DSM-IV scheme for classifying bulimic eating disorders. *International Journal of Eating Disorders*, 23, 7-15.
- Heatherton, T.F., & Baumeister, R.F. (1991). Binge eating as escape from self-awareness. *Psychological Bulletin*, 110, 86-108.
- Herman, C.P., & Polivy, J. (1984). A boundary model for the regulation of eating. In A. B. Stunkard & E. Stellar (Eds.), *Eating and its disorders*. New York: Raven Press.
- Hoencamp, E. (1999). "Yes doctor, no doctor": What do patients want from you? *Acta Psychiatrica Scandinavica*, 100, 319-320.
- Hsu, L.G., Mulliken, B., McDonagh, B., Krupa Das, S., Rand, W., Fairburn, C.G., Rolls, B., McCrory, M.A., Saltzman, E., Shikora, S., Dwyer, J., & Roberts, S. (2002). Binge eating disorder in extreme obesity. *International Journal of Obesity and*

*Related Metabolic Disorders*, 26, 1398-1403.

- Jeffery, R.W., Drewnowski, A., Epstein, L.H., Stunkard, A.J., Wilson, G.T., Wing, R.R., Hill, D.R. (2000). Long-term maintenance of weight loss: Current status. *Health Psychology*, 19, 5-16.
- Jeffery, R.W., Wing, R.R., Thorson, C., Burton, L.R., Raether, C., Harvey, J., & Mullen, M. (1993). Strengthening behavioral interventions for weight loss: A randomized trial of food provision and monetary incentives. *Journal of Consulting and Clinical Psychology*, 61, 1038-1045.
- Johnson, W.G., Boutelle, K.W., Torgrud, L., Davig, J.P., & Turner, S. (2000). What is a binge? The influence of amount, duration, and loss of control criteria on judgments of binge eating. *International Journal of Eating Disorders*, 27, 471-479.
- Johnson, W.G., Carr-Nangle, R.E., Nangle, D.W., Antony, M.M., & Zayfort, C. (1997). What is a binge? A comparison of binge eater, peer, and professional judgments of eating episodes. *Addictive Behaviors*, 22, 631-635.
- Johnson, W.G., Robertson-Nay, R., Rohan, K.J., & Torgrud, L. (2003). An experimental investigation of DSM-IV binge eating criteria. *Eating Behaviors*, 4, 295-303.
- Johnston, M., Wright, S., & Weinman, J. (1995). *Measures in health psychology: A user's portfolio. Stress, emotion and life events*. Windsor: NFER-NELSON Publishing Company Ltd.
- Kazdin, A.E., & Weisz, J.R. (1998). Identifying and developing empirically supported child and adolescent treatments. *Journal of Consulting and Clinical Psychology*, 66, 19-36.
- Keel, P.K., Klump, K.L., Leon, G.R., Fulkerson, J.A. (1998). Disordered eating in adolescent males from a school-based sample. *International Journal of Eating Disorders*, 23, 125-132.
- Kenardy, J., Arnow, B., & Agras, W.S. (1996). The aversiveness of specific emotional states associated with binge-eating in obese subjects. *Australian and New Zealand Journal of Psychiatry*, 30, 839-844.
- Kerzhnerman, I., & Lowe, M.R. (2002). Correlates of subjective and objective binge eating in binge-purge syndromes. *International Journal of Eating Disorders*, 31, 220-228.

- Klerman, G.L., Weissman, M.M., Rounsaville, B.J., & Chevron, E.S. (1984). *Interpersonal Psychotherapy of Depression*. New Jersey: Aronson.
- King, L.A. (2002). Gain without pain? Expressive writing and self-regulation. In S.J. LePore & J.M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and well-being*. Washington DC: APA.
- Kinzl, J.F., Traweger, C., Trefalt, E., Mangweth, B., & Biebl, W. (1999). Binge eating disorder in females: A population-based investigation. *International Journal of Eating Disorders*, 25, 287-292.
- Lacey, J.H. (1986). Bulimia nervosa, binge eating and psychogenetic vomiting: A controlled treatment study and long-term outcome. *British Medical Journal*, 286, 1611-1613.
- Lane, R.D., Sechrest, L., & Riedel, R. (1998). Sociodemographic correlates of alexithymia. *Comprehensive Psychiatry*, 39, 377-385.
- Langston, C.A. (1994). Capitalizing on and coping with daily-life events: Expressive responses to positive events. *Journal of Personality and Social Psychology*, 67, 1112-1125.
- Larsen, J.K., van Strien, T., Eisinga, R., & Engels, R.C.M.E. (2006). Gender differences in the association between alexithymia and emotional eating in obese individuals. *Journal of Psychosomatic Research*, 60, 237-243.
- Latner, J.D., & Wilson, G.T. (2000). Cognitive-behavioral therapy and nutritional counseling in the treatment of bulimia nervosa and binge eating. *Eating Behaviors*, 1, 3-21.
- Latner, J.D., & Wilson, G.T. (2002). Self-monitoring and the assessment of binge eating. *Behavior Therapy*, 33, 465-477.
- LePore, S.J., Greenberg, M.A., Bruno, M., & Smyth, J.M. (2002). Expressive writing and health: Self-regulation of emotion-related experience, physiology, and behavior. In S. J. LePore & J. M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and well-being*. Washington DC: APA.
- Linehan, M.M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford Press.



- Linehan, M.M. (1998). An illustration of dialectical behavior therapy. *In Session*, 4, 21-44.
- Lingswiler, V.M., Crowther, J.H., & Stephens, M.A. (1989). Affective and cognitive antecedents to eating episodes in bulimia and binge eating. *International Journal of Eating Disorders*, 8, 533-539.
- Loeb, K.L., Wilson, T., Gilbert, J.S., & Labouvie, E. (2000). Guided and unguided self-help for binge eating. *Behaviour Research and Therapy*, 38, 259-272.
- Lovibond, P.F., & Lovibond, S.H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33, 335-343.
- Lowe, M.R. (1993). The effects of dieting on eating behavior: A three-factor model. *Psychological Bulletin*, 114, 100-121.
- Lowe, M.R., Whitlow, J.W., & Bellwoar, V. (1991). Eating regulation: The role of restraint, dieting, and weight. *International Journal of Eating Disorders*, 10, 461-471.
- Lumly, M.A., Tojek, T.M., & Macklem, D.J. (2002). The effects of written emotional disclosure among repressive and alexithymic people. In S. J. LePore & J. M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and well-being*. Washington DC: APA.
- Luce, K.H., & Crowther, J.H. (1999). The reliability of the eating disorder examination – Self-report questionnaire version (EDE-Q). *International Journal of Eating Disorders*, 25, 349-351.
- Macht, M. (1999). Characteristics of eating in anger, fear, sadness, and joy. *Appetite*, 33, 129-139.
- Marchesini, G., Natale, S., Chierici, S., Manini, R., Besteghi, L., Di Domizio, S., Sartini, A., Pasqui, F., Baraldi, L., Forlani, G., & Melchionda, N. (2002). Effects of cognitive-behavioural therapy on health-related quality of life in obese subjects with and without binge eating disorder. *International Journal of Obesity*, 26, 1261-1267.
- Marcus, M. (1993). Binge eating in obesity. In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment*. New York: Guilford.
- Marcus, M. (1996). Adapting treatment for patients with binge-eating disorder. In D. M. Garner & P. E. Garfinkel (Eds.), *Handbook of treatment for eating disorders* (2<sup>nd</sup> ed.).

New York: Guilford Press.

- Marcus, M.D., Wing, R.R., & Hopkins, J. (1988). Obese binge eaters: Affect cognitions and response to behavioural weight control. *Journal of Consulting and Clinical Psychology, 56*, 433-439.
- Martin, C.K., Williamson, D.A., Thaw, J.M. (2000). Criterion validity of the multi-axial assessment of eating disorder symptoms. *International Journal of Eating Disorders, 28*, 303-310.
- Masheb, R.M., & Grilo, C.M. (2000). Binge eating disorder: A need for additional diagnostic criteria. *Comprehensive Psychiatry, 41*, 159-162.
- Masheb, R.M., & Grilo, C.M. (2002). On the relation of flexible and rigid control of eating to body mass index and overeating in patients with binge eating disorder. *International Journal of Eating Disorders, 31*, 82-91.
- McMain, S., Korman, L.M., & Dimeff, L. (2001). Dialectical behavior therapy and the treatment of emotion dysregulation. *Journal of Clinical Psychology, 57*, 183-196.
- Mizes, J.S., & Sloan, D.M. (1998). An empirical analysis of eating disorder, not otherwise specified; preliminary support for a distinct subgroup. *International Journal of Eating Disorders, 23*, 233-242.
- Muhlheim, L.S., Allison, D.B., Heshka, S., & Heymsfield, S.B. (1998). Do unsuccessful dieters intentionally underreport food intake? *International Journal of Eating Disorders, 24*, 259-266.
- Murphy, C. (2003, July). *Quote from Obesity Action Coalition (OAC) executive director: Health groups form obesity coalition*. Retrieved September 30, 2004, from <http://www.stuff.co.nz>.
- Mussell, M., Mitchell, J., Weller, C., Raymond, N., Crow, S., & Crosby, R. (1995). Onset of binge eating, dieting, obesity, and mood disorders among subjects seeking treatment for binge eating disorder. *International Journal of Eating Disorders, 17*, 395-401.
- Nemiah, J.C., Freyberger, H., & Sifneos, P.E. (1976). Alexithymia: A view of the psychosomatic process. In O. W. Hill. (Ed.), *Modern trends psychosomatic medicine* (Vol. 2, pp. 26-34). London: Butterworths.
- Nguyen, T.D., Attkisson, C.C., & Stegner, B.L. (1983). Assessment of patient

- satisfaction: Development and refinement of a service evaluation questionnaire. *Evaluation and Program Planning*, 6, 299-314.
- Napolitano, M.A., Head, S., Babyak, M.A., & Blumenthal, J.A. (2001). Binge eating disorder and night eating syndrome: Psychological and behavioral characteristics. *International Journal of Eating Disorders*, 30, 193-203.
- National Heart, Lung, and Blood Institute. (1998). *Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: The evidence report*. Bethesda, Md: Author.
- Palmer, R.L., Birchall, H., McGrain, L., & Sullivan, V. (2002). Self-help for bulimic disorders: A randomised controlled trial comparing minimal guidance with face-to-face or telephone guidance. *British Journal of Psychiatry*, 181, 230-235.
- Parker, J.D., Bagby, R.M., Taylor, G.J., Endler, N.S., & Schmitz, P. (1993). Factorial validity of the 20-item Toronto Alexithymia Scale. *European Journal of Personality*, 7, 221-232.
- Parker, J.D., Taylor, G.J. & Bagby, R.M. (2003). The 20-item TAS III: Reliability and factorial validity in a community population. *Journal of Psychosomatic Research*, 55, 269-275.
- Parrott, W.G. (1993). Beyond hedonism: Motives for inhibiting good moods and for maintaining bad moods. In D. M. Wegner & J. W. Pennebaker. (Eds.), *Handbook of Mental Control* (pp. 278-308). Englewood Cliffs, NJ: Prentice-Hall.
- Paxton, S.J., & Diggins, J. (1997). Avoidance coping, binge eating, and depression: An examination of the Escape Theory of binge eating. *International Journal of Eating Disorders*, 22, 83-87.
- Pendleton, V.R., Goodrick, G.K., Poston, W.S., Reeves, R.S., & Foreyt, J.P. (2002). Exercise augments the effects of cognitive-behavioral therapy in the treatment of binge eating. *International Journal of Eating Disorders*, 31, 172-184.
- Pennebaker, J.W. (1993). Putting stress into words: Health, linguistic, and therapeutic implications. *Behaviour Research and Therapy*, 31, 539-548.
- Pennebaker, J.W., & Beall, S.K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology*, 95, 274-281.

- Peterson, C.B., & Mitchell, J.E. (1996). Treatment of binge-eating disorder in group cognitive-behavioral therapy. In J. Werne & I. D. Yalom (Eds.), *Treating eating disorders*. San Francisco: Jossey-Bass Publishers.
- Peterson, C.B., Mitchell, J.E., Engbloom, S., Nugent, S., Mussell, M.P., & Miller, J.P. (1998). Group cognitive-behavioural treatment of binge eating disorder: A comparison of therapist-led versus self-help formats. *International Journal of Eating Disorders*, 24, 125-136.
- Peterson, C.B., Mitchell, J.E., Engbloom, S., Nugent, S., Mussell, M.P., Crow, S.J., & Thuras, P. (2001). Self-help versus therapist-led group cognitive-behavioral treatment of binge eating disorder at follow-up. *International Journal of Eating Disorders*, 30, 363-374.
- Pinaquy, S., Chabrol, H., Simon, C., Louvet, J-P., Barbe, P. (2003). Emotional eating, alexithymia, and binge-eating disorder in obese women. *Obesity Research*, 11, 195-201.
- Polivy, J., & Herman, C.P. (1976). Effects of alcohol on eating behavior: Influence of mood and perceived intoxication. *Journal of Abnormal Psychology*, 85, 601-606.
- Polivy, J., & Herman, C.P. (1976b). The effects of alcohol on eating behavior: Disinhibition or sedation? *Addictive Behaviors*, 1, 121-125.
- Porzelius, L.K., Houston, C., Smith, M., Arfken, C., & Fisher, E. (1995). Comparison of a standard behavioral weight loss treatment and a binge eating weight loss treatment. *Behavior Therapy*, 26, 119-134.
- Powers, P.S., Perez, A., Boyd, F., & Rosemurgy, A. (1999). Eating pathology before and after bariatric surgery: A prospective study. *International Journal of Eating Disorders*, 25, 293-300.
- Pratt, E.M., Niego, S.H., & Agras, W.S. (1998). Does the size of the binge matter? *International Journal of Eating Disorders*, 24, 307-312.
- Raymond, N.C., deZwann, M., Mitchell, J.E., Ackard, D., & Thuras, P. (2002). Effect of a very low calorie diet on the diagnostic category of individuals with binge eating disorder. *International Journal of Eating Disorders*, 31, 49-56.
- Reas, D.L., Grilo, C.M., & Masheb, R.M. (2006). Reliability of the Eating Disorder Examination-Questionnaire in patients with binge eating disorder. *Behaviour*

- Research and Therapy*, 44, 43-51.
- Reiner, R., Schindler, K., & Ludwik, B. (2005). Psychosocial variables, eating behavior, depression, and binge eating in morbidly obese subjects. Manuscript submitted for publication.
- Rossiter, E.M., Agras, W.S., Telch, C.F., & Bruce, B. (1992). The eating patterns of nonpurging bulimic subjects. *International Journal of Eating Disorders*, 11, 111-120.
- Ruderman, A.J. (1986). Dietary restraint: A theoretical and empirical review. *Psychological Bulletin*, 99, 247-262.
- Safer, D.L., Lively, T.J., Telch, C.F., & Agras, W.S. (2002). Predictors of relapse following successful dialectical behavior therapy for binge eating disorder. *International Journal of Eating Disorders*, 32, 155-163.
- Salovey, P., Mayer, J.D., Goldman, S.L., Turvey, C., & Palfai, T.P. (1995). Emotional attention, clarity, and repair: exploring emotional intelligence using the Trait Meta-Mood Scale. In J. W. Pennebaker (Ed.), *Emotion, disclosure, and health* (pp.125-154). Washington, D.C: APA.
- Santonastaso, P., Ferrara, S., & Favaro, A. (1999). Differences between binge eating disorder and nonpurging bulimia nervosa. *International Journal of Eating Disorders*, 25, 215-218.
- Sarafino, E.P. (1996). *Principles of behavior change: Understanding behavior modification techniques*. Canada: John Wiley & Sons, Inc.
- Schmidt, U. (1998). Eating disorders and obesity. In P. Graham (Ed.), *Cognitive-behavioural therapy for children and families*. Cambridge: Cambridge University Press.
- Sloan, D.M., Mizes, J.S., & Epstein, E.M. (2005). Empirical classification of eating disorders. *Eating Behaviors*, 6, 53-62.
- Smith, D., Marcus, M., & Eldredge, K. (1994). Binge eating syndromes: A review of assessment and treatment with an emphasis on clinical application. *Behavior Therapy*, 25, 635-658.
- Specker, S., deZwann, M., Raymond, N., & Mitchell, J. (1994). Psychopathology in subgroups of obese women with and without binge eating disorder. *Comprehensive Psychiatry*, 35, 185-190.

- Spitzer, R., Devlin, M., Walsh, B., Hasin, D., Wing, R., Marcus, M., Stunkard, A., Wadden, T., Yanovski, S., Agras, S., Mitchell, J., & Nonas, C. (1992). Binge eating disorder: A multisite field trial of the diagnostic criteria. *International Journal of Eating Disorders, 11*, 191-203.
- Spitzer, R., Yanovski, S., Wadden, T., Wing, M., Marcus, M., Stunkard, A., Devlin, M., Mitchell, J., Hasin, D., & Horne, R. (1993). Binge eating disorder: Its further evaluation in a multisite study. *International Journal of Eating Disorders, 13*, 137-153.
- Spurrell, E.B., Wilfley, D.E., Tanofsky, M.B., & Brownell, K.D. (1997). Age of onset for binge eating: Are there different pathways to binge eating? *International Journal of Eating Disorders, 21*, 55-65.
- Stice, E., Akutagawa, D., Gaggan, A., & Agras, W.S. (2000). Negative affect moderates the relation between dieting and binge eating. *International Journal of Eating Disorders, 27*, 218-229.
- Stice, E., Agras, W.S., Telch, C.F., Halmi, K.A., Mitchell, J.E., & Wilson, T. (2001). Subtyping binge eating-disordered women along dieting and negative affect dimensions. *International Journal of Eating Disorders, 30*, 11-27.
- Stice, E., Killen, J.D., Hayward, C., & Taylor, C.B. (1998). Support for the continuity hypothesis of bulimic pathology. *Journal of Consulting and Clinical Psychology, 66*, 784-790.
- Stickney, M.I., & Miltenberger, R.G. (1999). Evaluating direct and indirect measures for the functional assessment of binge eating. *International Journal of Eating Disorders, 26*, 195-204.
- Stickney, M.J., Miltenberger, R.G., & Wolff, G. (1999). A descriptive analysis of factors contributing to binge eating. *Journal of Behavior Therapy and Experimental Psychiatry, 30*, 177-189.
- Striegel-Moore, R.H., Cachelin, F.M., Dohm, F.A., Pike, K.M., Wilfley, D.E., & Fairburn, C.G. (2001). Comparison of binge eating disorder and bulimia nervosa in a community sample. *International Journal of Eating Disorders, 29*, 157-165.

- Striegel-Moore, R.H., Dohm, F.A., Solomon, E.E., Fairburn, C.C., Pike, K.M., & Wilfley, D.E. (2000). Subthreshold binge eating disorder. *International Journal of Eating Disorders*, 27, 270-278.
- Striegel-Moore, R.H., Wilson, G.T., Wilfley, D.E., Elder, K.A., & Brownell, K. (1998). Binge eating in an obese community sample. *International Journal of Eating Disorders*, 23, 27-38.
- Stunkard, A.J. (1959). Eating patterns and obesity. *Psychiatric Quarterly*, 33, 284-295.
- Stunkard, A.J., & Allison, K.C. (2003). Two forms of disordered eating in obesity: Binge eating and night eating. *International Journal of Obesity*, 27, 1-12.
- Stunkard, A.J., Berkowitz, R., Wadden, T., Tanrikut, C., Reiss, E., & Young, L. (1996). Binge eating disorder and the night-eating syndrome. *International Journal of Obesity*, 20, 1-8.
- Stunkard, A.J., Grace, W.J., & Wolff, H.G. (1955). The night-eating syndrome. *American Journal of Medicine*, 19, 78-86.
- Stunkard, A.J., & Messick, S. (1985). The Three Factor Eating Questionnaire to measure dietary restraint, disinhibition, and hunger. *Journal of Psychosomatic Research*, 29, 71-81.
- Surgenor, L. (1985). Attitudes toward seeking professional psychological help. *New Zealand Journal of Psychology*, 14, 27-33.
- Swain-Campbell, N.R., Surgenor, L.J., & Snell, D.L. (2001). An analysis of consumer perspectives following contact with an eating-disorders service. *Australian and New Zealand Journal of Psychiatry*, 35, 99-103.
- Swinburn, B., Ashton, T., Gillespie, J., Cox, B., Menon, A., Simmons, D., & Birkbeck, J. (1997). Health care costs of obesity in New Zealand. *International Journal of Obesity*, 21, 891-896.
- Tanofsky, M.B., Wilfley, D.E., Spurrell, E.B., Welch, R., & Brownell, K.D. (1997). Comparison of men and women with binge eating disorder. *International Journal of Eating Disorders*, 21, 49-54.
- Taylor, G.J., Bagby, R.M., Ryan, D., Parker, J., Doody, K., & Keefe, P. (1988). Criterion validity of the Toronto Alexithymia Scale. *Psychosomatic Medicine*, 50, 500-509.
- Taylor, G.J., Parker, J.D., Bagby, R.M., & Bourke, M.P. (1996). Relationships between

- alexithymia and psychological characteristics associated with eating disorders. *Journal of Psychosomatic Research*, 41, 561-568.
- Taylor, G.J., Ryan, D.P., Bagby, R.M. (1985). Toward the development of a new self-report alexithymia scale. *Psychotherapy and Psychosomatics*, 44, 191-199.
- Telch, C.F. (1997). Skills training treatment for adaptive affect regulation in a woman with binge-eating disorder. *International Journal of Eating Disorders*, 22, 77-81.
- Telch, C.F., & Agras, W.S. (1994). Obesity, binge eating and psychopathology: Are they related? *International Journal of Eating Disorders*, 15, 53-61.
- Telch, C.F., & Agras, W.S. (1996). Do emotional states influence binge eating in the obese? *International Journal of Eating Disorders*, 20, 271-279.
- Telch, C., Agras, W., Rossiter, E., Wilfley, D., & Kenardy, J. (1990). Group cognitive-behavioural treatment for the nonpurging bulimic: An initial evaluation. *Journal of Consulting and Clinical Psychology*, 58, 629-639.
- Telch, C.F., Agras, W.S., & Linehan, M.M. (2000). Group dialectical behavior therapy for binge-eating disorder: A preliminary, uncontrolled trial. *Behavior Therapy*, 31, 569-582.
- Telch, C.F., Agras, W.S., & Linehan, M.M. (2001). Dialectical behavior therapy for binge eating disorder: A promising new treatment. *Journal of Consulting and Clinical Psychology*, 69, 1061-1065.
- Telch, C.F., Pratt, E.M., & Niego, S.H. (1998). Obese women with binge eating disorder define the term binge. *International Journal of Eating Disorders*, 24, 313-317.
- Thayer, J.F., Rossy, L.A., Ruiz-Padial, E., & Johnsen, B.H. (2003). Gender differences in the relationships between emotional regulation and depressive symptoms. *Cognitive Therapy and Research*, 27, 349-364.
- Timko, C.A., & Perone, J. (2005). Rigid and flexible control of eating behavior in a college population. *Eating Behaviors*, 6, 119-125.
- Troop, N.A., Holbrey, A., Trowler, R., & Treasure, J.L. (1994). Ways of coping in women with eating disorders. *The Journal of Nervous and Mental Disease*, 182, 535-540.



- Van Strien, T., Cleven, A., & Schippers, G. (2000). Restraint, tendency toward overeating and ice cream consumption. *International Journal of Eating Disorders*, 28, 333-338.
- Waller, G., & Osman, S. (1998). Emotional eating and psychopathology among non-eating disordered women. *International Journal of Eating Disorders*, 23, 419-424.
- Waters, A., Hill, A., & Waller, G. (2001). Bulimics' response to food cravings: Is binge-eating a product of hunger or emotional state? *Behaviour Research & Therapy*, 39, 877-886.
- Weltzin, T.E., Weisensel, N., Franczyk, D., Burnett, K., Klitz, C., & Bean, P. (2005). Eating disorders in men: Update. *Journal of Men's Health and Gender*, 2, 186-193.
- Westenhoefer, J. (1991). Dietary restraint and disinhibition: Is restraint a homogenous construct? *Appetite*, 16, 45-55.
- Westernhoefer, J., Broeckmann, P., Münch, A.K., & Pudel, V. (1994). Cognitive control of eating behavior and the disinhibition effect. *Appetite*, 23(1), 27-41.
- Westernhoefer, J., Stunkard, A.J., & Pudel, V. (1999). Validation of the Flexible and Rigid Control dimensions of dietary restraint. *International Journal of Eating Disorders*, 26, 53-64.
- Wilfley, D., Agras, W., Telch, C., Rossiter, E., Schneider, J., Cole, A., Sifford, L., & Raeburn, S. (1993). Group cognitive-behavioural therapy and group interpersonal psychotherapy for the nonpurging bulimic individual: A controlled comparison. *Journal of Consulting and Clinical Psychology*, 61, 296-305.
- Wilfley, D.E., Friedman, M.A., Dounchis, J.Z., Stein, R.J., Welch, R.R., & Ball, S.A. (2000). Comorbid psychopathology in binge eating disorder: Relation to eating disorder severity at baseline and following treatment. *Journal of Consulting and Clinical Psychology*, 68, 641-649.
- Wilfley, D.E., Schwartz, M.B., Spurrell, E.B., & Fairburn, C.G. (1997). Assessing the specific psychopathology of binge eating disorder patients: interview or self-report? *Behaviour Research and Therapy*, 35, 1151-1159.
- Wilfley, D.E., Welch, R.R., Stein, R.I., Spurrell, E.B., Cohen, L.R., Saelens, B.F., Dounchis, J.Z., Frank, M.A., Wiseman, C.V., & Matt, G.E. (2002). A randomized comparison of group cognitive behavior therapy and group interpersonal

- psychotherapy for the treatment of overweight individuals with binge eating disorder. *Archives of General Psychiatry*, 59, 713-721.
- Wilfley, G.T., Wilson, G.T., & Agras, W.S. (2003). The clinical significance of binge eating disorder. *International Journal of Eating Disorders*, 34, S96-S106.
- Wilson, G.T. (1993). Assessment of binge eating. In C. G. Fairburn & G. T. Wilson (Eds.), *Binge eating: Nature, assessment, and treatment*. New York: Guilford Press.
- Wilson, G.T. (1999). Rapid response in cognitive behavior therapy. *Clinical Psychology: Science and Practice*, 6, 289-292.
- Wilson, G.T. (2005). Psychological treatment of eating disorders. *Annual Reviews of Clinical Psychology*, 1, 439-465.
- Wilson, G.T., & Fairburn, C.G. (1998). Treatments for eating disorders. In P. E. Nathan & J. M. Gorman (Eds.), *A guide to treatments that work*. New York: Oxford University Press.
- Wilson, G.T., & Fairburn, C.G. (2002). Treatments for eating disorders. In P. E. Nathan (Ed.), *Treatments for eating disorders* (2<sup>nd</sup> ed.). New York: Oxford University Press.
- Wilson, G.T., Fairburn, C.G., Agras, W.S., Walsh, B.T., & Kraemer, H. (2002). Cognitive-behavioral therapy for bulimia nervosa: time course and mechanisms of change. *Journal of Consulting and Clinical Psychology*, 70, 267-274.
- Wilson, G.T., Nonas, C.A., & Rosenblum, G.D. (1993). Assessment of binge eating in obese patients. *International Journal of Eating Disorders*, 13, 25-33.
- Wilson, G.T., Rossiter, E.M., Kleifield, E.I., & Lindholm, L. (1986). Cognitive-behavioral treatment of bulimia nervosa: A controlled evaluation. *Behaviour Research and Therapy*, 24, 277-288.
- Wilson, G.T., & Vitousek, K.M. (1999). Self-monitoring in the assessment of eating disorders. *Psychological Assessment*, 11, 480-489.
- Wilson, G.T., Vitousek, K.M., & Loeb, K.L. (2000). Stepped care treatment for eating disorders. *Journal of Consulting and Clinical Psychology*, 68, 564-572.
- Wiser, S., & Telch, C.F. (1999). Dialectical behavior therapy for binge-eating disorder. *Journal of Clinical Psychology*, 55, 755-768.

- Wolf, E.M., & Crowther, J.H. (1992). An evaluation of behavioral and cognitive-behavioral group intervention for the treatment of bulimia nervosa in women. *International Journal of Eating Disorders*, 11, 3-16.
- Wolff, G.E., & Clark, M.M. (2001). Changes in eating self-efficacy and body image following cognitive-behavioral group therapy for binge eating disorder: A clinical study. *Eating Behaviors*, 2, 97-104.
- Wonderlich, S.Z., deZwann, M., Mitchell, J.E., Peterson, C., & Crow, S. (2003). Psychological and dietary treatments of binge eating disorder: Conceptual implications. *International Journal of Eating Disorders*, 34, S58-S73.
- Woodside, D.B. (2002). Eating disorders in men: An overview. *Healthy Weight Journal*, 16, 52-55.
- Woodside, D.B., & Kaplan, A.S.(1994). Day hospital treatment in males with eating disorders – Response and comparison to females. *Journal of Psychosomatic Research*, 38, 471-475.
- Yanovski, S.Z., & Sebring, N.G. (1994). Recorded food intake of obese women with binge eating disorder before and after weight loss. *International Journal of Eating Disorders*, 15, 135-150.

## Appendix One

### *Large Advertisement Placed in the Local Newspapers*

# Binge eating can affect any person at any time

**E**motional binge eating, or binge eating disorder, can affect both males and females of all ages.

Unlike bulimia, where binges are often followed by purging, excessive exercise, or overuse of laxatives, those with binge eating disorder do not try to rid themselves of the food and drink they have consumed.

Bingeing happens even when the person is not feeling hungry, and is often associated with a strong feeling of being out of control. The person can't resist bingeing, or they can't stop eating once they've started.

Binges may be triggered by negative emotions or moods, and the compulsion to eat may be to deal with the distress they are feeling. The person may go into an altered state of consciousness, and may be barely aware

they are eating until they are finished.

As binges are not associated with compensation, like purging or excessive exercise, binge eaters are often obese. Thus, those with binge eating problems often feel loathing or revulsion towards their bodies, and as a result often avoid looking in mirrors or window reflections.

Binge eating disorder is also often associated with excessive dieting and chaotic eating patterns. Nevertheless, some binge eaters can follow a very healthy diet when they are not bingeing, and are sometimes of normal weight.

Treatment consists of teaching people how to recognise and regulate their emotions, and how to improve their negative attitudes towards themselves.

## Bingeing & Emotions

Male and female volunteers, aged 18 or over, are wanted for research on emotional binge eating. Those who wish to receive free help for binge eating problems will be asked to fill in two short questionnaires. Soon after, you may be invited back to participate in a programme that involves learning new skills in small groups. The programme lasts 12 weeks, and includes training in recognising and managing emotions. Every volunteer who participates in the programme will be given a \$15 petrol voucher to help with travel costs. This is a great opportunity to address a problem that distresses many people on a daily basis.

Please call Courtney on 9804-725,  
or e-mail her on [cgc25@student.canterbury.ac.nz](mailto:cgc25@student.canterbury.ac.nz).



## Appendix Two

### *Letter Sent to Those Displaying Purging and/or Compensatory Behaviours*

**Date, day, month, year**

XX  
XX  
XX  
CHRISTCHURCH

Dear X,

I am writing to let you know that you have not been chosen to participate in the emotional binge eating programme.

Having reviewed your answers in the questionnaires you filled in, my supervisor and I noticed that you seem to have symptoms that are commonly found in bulimia nervosa. Although we are not able to offer you a diagnosis as to whether or not you have bulimia nervosa, we would like to recommend that you speak to your general practitioner regarding your eating and any related problems you may have.

To help your GP, we are willing to give them a report outlining the results of the questionnaires you filled in. We will not do this unless you personally ask for our report.

Thank you for taking the time to come and fill in the questionnaires. We really appreciate your time and efforts. If you would like to speak to me regarding this letter, please call me on 9804-725.

Take care.

Yours sincerely,

Courtney Clyne.

### Appendix Three

#### *QEW – New Zealand Version*

### QUESTIONNAIRE ON EATING AND WEIGHT PATTERNS-REVISED (QEW-R)©

Robert L. Spitzer, Susan Z. Yanovski, Marsha D. Marcus

Name \_\_\_\_\_ Date \_\_\_\_\_

Thank you for completing this questionnaire. Please circle the appropriate number or response, or write in information where asked. You may skip any question you do not understand or do not wish to answer.

1. Age \_\_\_\_\_ years
2. Sex: 1 male 2 female
3. What is your ethnical/racial background?
  1. New Zealand European
  2. Maori
  3. Pacific Island
  4. Asian
  5. Other (please specify) \_\_\_\_\_
4. What is your highest academic achievement?
  - a. None
  - b. School certificate or equivalent
  - c. Sixth form certificate
  - d. High school graduate
  - e. University, polytechnic or other tertiary degree or diploma
5. How tall are you?  
\_\_\_\_\_cms
6. How much do you weigh now?  
\_\_\_\_\_kgs
7. What has been your highest weight ever (when not pregnant)?  
\_\_\_\_\_kgs
8. Have you ever been overweight by at least 5kg as a child, or 10kg as an adult (when not pregnant)?
  - 1 Yes                      2 No or not sure

**If yes:** How old were you when you were first overweight (by at least 5kg as a child or by 10kg as an adult)? If you are not sure, what is your best guess?  
\_\_\_\_\_ years

**9.** How many times (approximately) have you lost 9kg or more – when you weren't sick – then gained it back?

- a. Never
- b. Once or twice
- c. Three or four times
- d. Five times or more

**10.** During the past **two** months, did you often eat within any two hour period what most people would regard as an unusually large amount of food?

- 1 Yes                      2 No

**If no:** Skip to question 15.

**11.** During the times when you ate this way, did you often feel you couldn't stop eating or control what or how much you were eating?

- 1 Yes                      2 No

**If no:** Skip to question 15.

**12.** During the past **two** months, how often, on average, did you have times when you ate this way – that is, large amounts of food **plus** the feeling that your eating was out of control? (There may have been some weeks when it was not present – just average those in.)

- a. Less than one day a week
- b. One day a week
- c. Two or three days a week
- d. Four or five days a week
- e. Nearly every day

**13.** Did you **usually** have any of the following experiences during these occasions?

- |  |     |    |
|--|-----|----|
| a. Eating much more rapidly than usual?  | Yes | No |
| b. Eating until you felt uncomfortably full?                                       | Yes | No |
| c. Eating large amounts of food when you didn't feel physically hungry?            | Yes | No |
| d. Eating alone because you were embarrassed by how much you were eating?          | Yes | No |
| e. Feeling disgusted with yourself, depressed, or feeling guilty after overeating? | Yes | No |

**14.** Think about a typical time when you ate this way – that is, large amounts of food **plus** the feeling that your eating was out of control.

1. What time of the day did the episode start?

- a. Morning (8am to 12 noon)
- b. Early afternoon (12 noon to 4pm)
- c. Late afternoon (4pm to 7pm)
- d. Evening (7pm to 10pm)
- e. Night (after 10pm)

2. Approximately how long did this episode of eating last, from the time you started to when you stopped and didn't eat again for at least two hours?

\_\_\_\_\_ hours \_\_\_\_\_ minutes

3. As best you can remember, please list everything you might have eaten or drunk during that episode. If you ate for more than two hours, describe the foods eaten and liquids drunk during the two hours that you ate the most. [Be specific – include brand names where possible, and amounts as best you can estimate. For example, 35g of Ripples salt and vinegar chips; 1 cup of Tip Top chocolate ice-cream with 2 teaspoons of hot fudge; 2 cans of coke; 1½ ham sandwiches with cheese and mustard.)

4. At the times this episode started, how long had it been since you had previously finished eating a meal or snack?

\_\_\_\_\_ hours \_\_\_\_\_ minutes

**15.** In general, during the past **two** months, how upset were you by overeating (eating more than you think is best for you)?

- a. Not at all
- b. Slightly
- c. Moderately
- d. Greatly
- e. Extremely

**16.** In general, during the past **two** months, how upset were you by the feeling that you couldn't stop eating or control what or how much you were eating?

- a. Not at all
- b. Slightly
- c. Moderately
- d. Greatly
- e. Extremely

**17.** During the past **two** months, how important has your weight or shape been in how you feel about or evaluate yourself as a person – as compared to other aspects of your life, such as how you do at work, as a parent, or how you get along with other people?

- a. Weight and shape were **not important**
- b. Weight and shape **played a part** in how you felt about yourself



- c. Weight and shape **were among the main things** that affected how you felt about yourself
- d. Weight and shape **were the most important things** that affected how you felt about yourself.

**18.** During the past **three** months, did you ever make yourself vomit in order to avoid gaining weight after binge eating?

- 1 Yes      2 No

**If yes:** How often, **on average**, was that?

- a. Less than once a week
- b. Once a week
- c. Two or three times a week
- d. Four or five times a week
- e. More than five times a week

**19.** During the past **three** months, did you ever take more than twice the recommended dose of laxative in order to avoid gaining weight after binge eating?

- 1 Yes      2 No

**If yes:** How often, **on average**, was that?

- a. Less than once a week
- b. Once a week
- c. Two or three times a week
- d. Four or five times a week
- e. More than five times a week

**20.** During the past **three** months, did you ever take more than twice the recommended dose of diuretics (water pills) in order to avoid gaining weight after binge eating?

- 1 Yes      2 No

**If yes:** How often, **on average**, was that?

- a. Less than once a week
- b. Once a week
- c. Two or three times a week
- d. Four or five times a week
- e. More than five times a week

**21.** During the past **three** months, did you ever fast – not eat anything at all for at least 24 hours – in order to avoid gaining weight after binge eating?

- 1 Yes      2 No

**If yes:** How often, **on average**, was that?

- a. Less than one day a week
- b. One day a week
- c. Two or three days a week
- d. Four or five days a week
- e. Nearly every day

**22.** During the past **three** months, did you ever exercise for more than an hour **specifically** in order to avoid gaining weight after binge eating?

- 1 Yes      2 No

**If yes:** How often, **on average**, was that?

- a. Less than once a week
- b. Once a week
- c. Two or three times a week
- d. Four or five times a week
- e. More than five times a week

**23.** During the past **three** months, did you ever take more than twice the recommended dose of a diet pill in order to avoid gaining weight after binge eating?

- 1 Yes      2 No

**24.** During the past **two** months, did you go to any meeting of an organised weight control programme (E.g., Weight Watchers, Jennie Craig) or a self-help programme (E.g., Overeaters Anonymous)?

- 1 Yes      2 No

**If yes:** Name the programme \_\_\_\_\_

**25.** Since you have been an adult – 18 years old – how much of the time have been on a diet, been trying to follow a diet, or in some way been limiting how much you were eating in order to lose weight or keep from regaining weight you had lost? Would you say....

- a. None or hardly any of the time
- b. About a quarter of the time
- c. About half of the time
- d. About three-quarters of the time
- e. Nearly all of the time

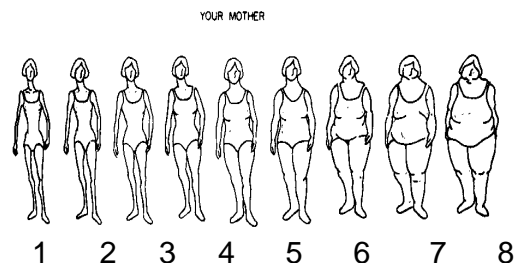
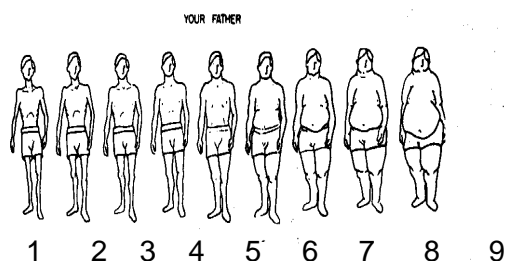
**26. SKIP THIS QUESTION IF YOU HAVE NEVER LOST AT LEAST 4.5KG BY DIETING:** How old were you the first time you lost at least 4.5kgs by dieting, or in some way limiting how much you ate? If you are not sure, what is your best guess?

\_\_\_\_\_ years

**27. SKIP THIS QUESTION IF YOU'VE NEVER HAD EPISODES OF EATING UNUSUALLY LARGE AMOUNTS OF FOOD ALONG WITH THE SENSE OF LOSS OF CONTROL:** How old were you when you first had times when you ate large amounts of food and felt that your eating was out of control? If you are not sure, what is your best guess?

\_\_\_\_\_ years

**28.** Please take a look at these silhouettes. Put a circle around the silhouettes which most resemble the body build of your natural father and mother **at their heaviest**. If you have no knowledge of your biological father and/or mother, don't circle anything for that parent.



## Appendix Four

### *The Programme Evaluation Questionnaire*

# PROGRAMME EVALUATION QUESTIONNAIRE

**Group:** \_\_\_\_\_ **Date:** \_\_\_\_\_

1. Have you enjoyed the programme? (please circle a number)

1 2 3 4 5 6 7  
not very much very much

2. What did you enjoy about the programme, and why?

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3. What did you not enjoy about the programme, and why?

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4. Did you find the programme helpful?

1 2 3 4 5 6 7  
not very much very much

If yes, what parts of the programme did you find of most use?

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If no, what parts of the programme did you find of little use?

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5. Do you feel more positively about your eating patterns, particularly your binge eating?

1	2	3	4	5	6	7
not very positive						very positive

If you feel positive about your eating patterns now, in what way did this programme help?

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6. What improvements do you think could be made to the programme to help with your binge eating problems?

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7. Overall, how do you feel having completed the programme?

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8. Would you recommend the programme to a friend or family member?

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9. Do you have any other comments?

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